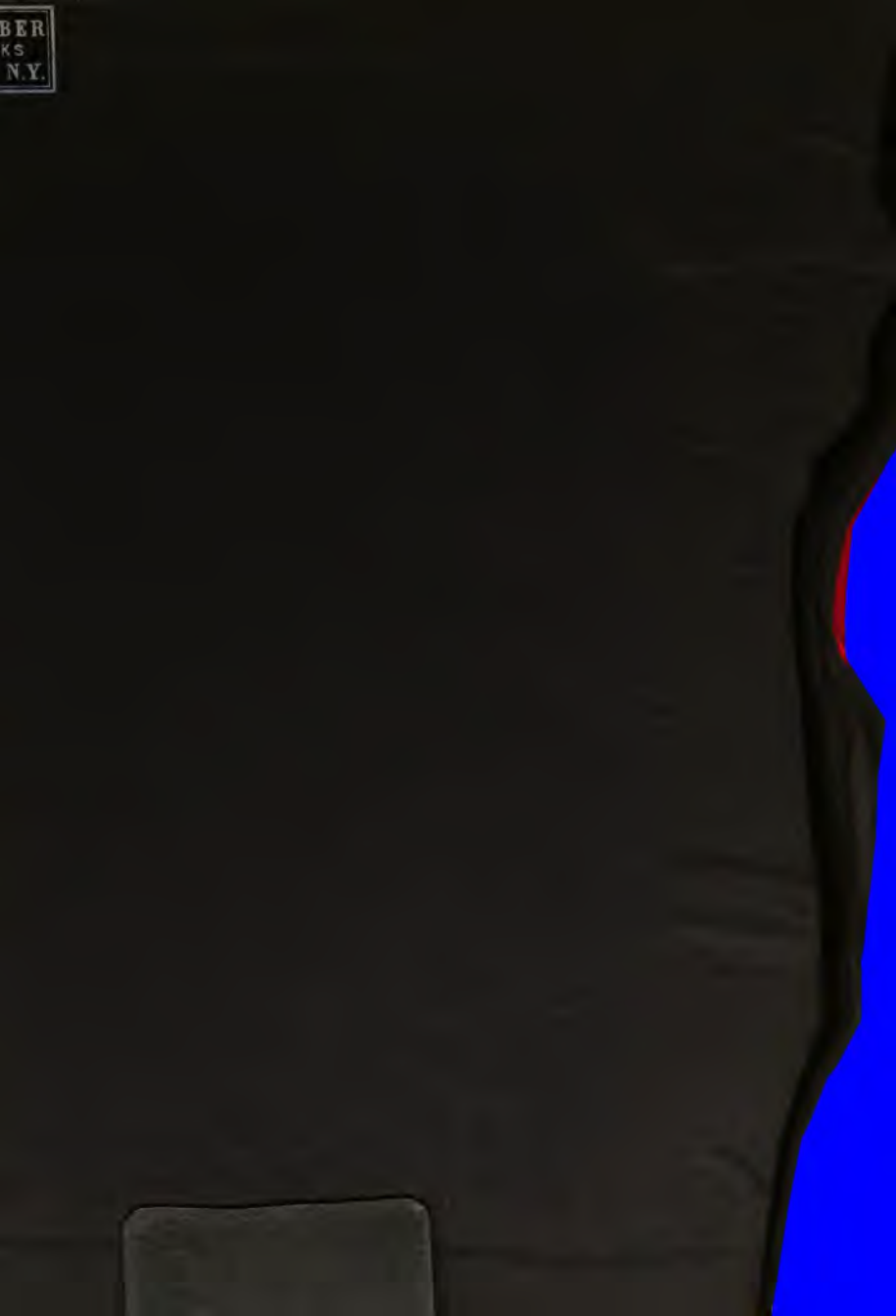
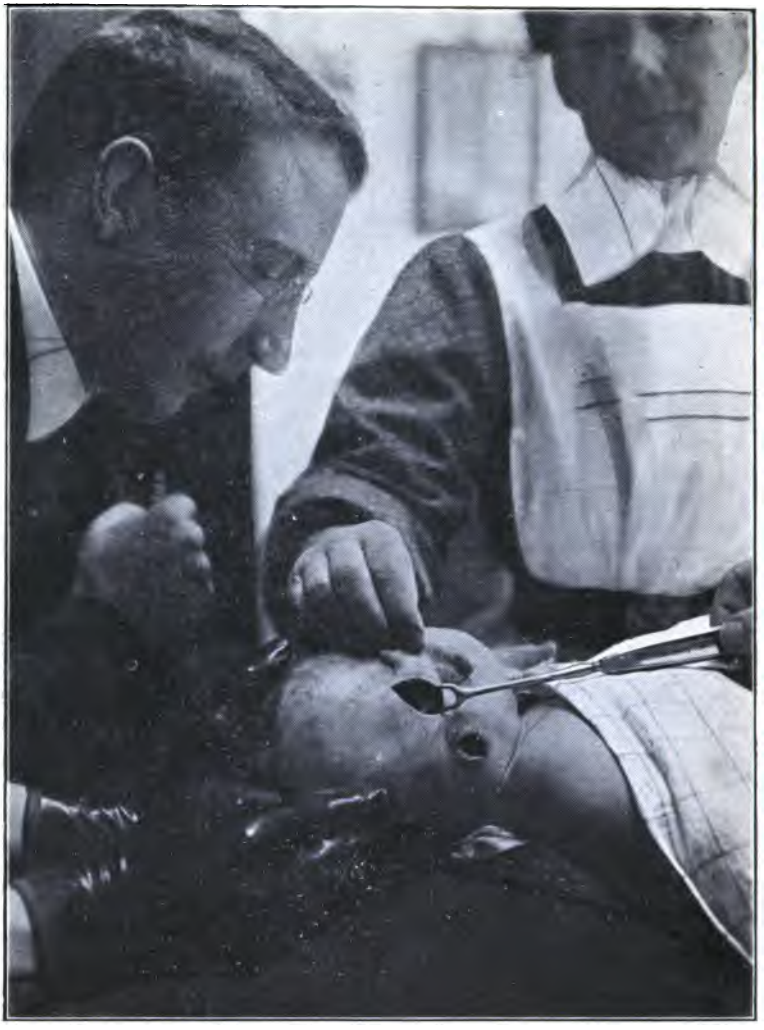


INFECTED EARS



This photograph shows the destructive effects of Ear Infection in a Child, six months' old.

The pus had spread far down the neck, opening behind the ear in two places, an opening in front of the ear is not shown in the photograph. The dark space to the left of the retractor is a large cavity in the bone. Though the ear disease had existed for three months, the child was not sent to me til the skin had given way—a not uncommon experience.

INFECTED EARS

(INTRAMEATAL TREATMENT).

BY

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To

The House Surgeons, Sisters and Nurses (past and present) of the Coventry Hospital, who, by their persevering care, have materially assisted towards the success of Intrameatal Treatment,

This Book is dedicated.

PREFACE.

In another book I have already demonstrated the value of intrameatal removal of diseased tissues from an infected ear. The present volume contains the results of three years' further experience of Otectomy. In it, I venture to think, may be found a solution of a difficulty which has been a reproach to our science and art, and one which must always be of the greatest importance to the public health.

F. FAULDER WHITE.

142 Harley Street, W.
May, 1908.

ACKNOWLEDGMENT

The Author desires to acknowledge his indebtedness to Messrs. Longmans, Green & Co., the well-known publishers, for the loan of the blocks illustrating the anatomy of the ear, which face page 26 of this work.

of instruments of adequate power or from climatic difficulties, to deny the truth of discoveries because they are not able to verify them.———In due time, one astronomer after another began to admit that possibly.———From "Earth's Beginning"

By Sir Richard Ball.

" The incredulity widely prevalent in the middle of the last century about the existence of the spiral nebulæ, may be paralleled by the incredulity about other discoveries in more recent years; when a highly skilled observer, using an instrument of adequate power, and, it may be, enjoying unequalled opportunities for good work, testifies to certain discoveries; when he has employed in the verification of his observations the skill and experience that years of practice have procured for him, it is futile for those who have not the like opportunities either from want of instruments of adequate power or from climatic difficulties, to deny the truth of discoveries because they are not able to verify them.———In due time, one astronomer after another began to admit that possibly.———From " Earth's Beginning "

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CONTENTS

INFECTED EARS.

CHAPTER I.

THE PREVALENCE AND IMPORTANCE OF INFECTIVE DISEASE OF THE EAR.

A SHORT time ago an intrameatal operation was advised in a case of suppurative otitis. The patient's father wrote to advise his son to have nothing done, on the ground that he knew lots of people who had running ears, and nobody took any notice of them. This person, though quite ignorant of the reasons for operating, was fairly correct as to his facts. Too little notice is taken of a complaint that frequently causes most serious trouble. The penalty for neglect is sometimes as sudden and hopeless as an apoplectic stroke. It is, however, surprising how many people will tolerate a foul condition of the ear, a condition that they would not suffer a moment longer than they could help in any other part of the body. One occasionally sees people going about with a growth protruding from the ear. Apart from the hideousness, such a condition is not free from danger.

The prevalence of infective disease of the ear is very great. Dr. Hackworth Stuart, in the "School Doctor," estimated the amount of such disease as being from one to two per cent. of the total

population. He has probably under-estimated the amount. Dr. J. A. H. Brincker examined the boys at Paddington Technical School. He found the general physique of the boys much better than those of boys in elementary schools. One or both ears were found defective in seven per cent., and in nearly half of these there was aural discharge present.[1] In some parts of the Continent these diseases would seem to be very prevalent, as may be gathered from the following figures published in *The Lancet:*

"At a recent meeting of the medical society of a considerable country town in Hungary, a school medical officer presented an interesting report on the examination of the ears of 1,000 school children. The investigation was undertaken with the objects of ascertaining the amount of ear disease in children of the poorest class, and, if necessary, of drawing attention to the subject. For the purpose of this inspection ears were considered to be normal when the membranes presented the usual appearance, and the whispered voice could be heard at a distance of from eight to twelve metres. Inability to pass this test with one or both ears was present in 634 out of 1,000 children. Foreign bodies were found in the ears of sixteen children, of whom 13 were girls. Of 107 cases of deafness there were adenoids in 91; 270 of the total number of children had a discharge from one or both ears, and in 74 cases the discharge was suppurative. The number who had previously suffered from middle ear discharge was 219, and of these 183 had adenoids, and perforation existed in

[1] *Dr. Kerr's Report, 1907.*

49, while adenoids occurred in 416 children, and of them 387 presented some aural troubles."

Surprising as these extracts may at first sight appear, I do not find any difficulty in accepting them as correct; but if they approach the truth, it follows that infective disease of the ears is one of the most common of diseases. It is, I believe, true, as I have said elsewhere, that the dreaded cancer causes less suffering to the community than does suppurative otitis. There is, however, no proportion at all between their respective importance and the space they occupy in the public mind.

Brain Disease. One of the most common of diseases, suppurative otitis is also one of the most serious. The close proximity of the brain and its membranes favours the spread of disease to these important structures. I have been present at several post mortem examinations which revealed unexpected aural disease as the primary cause of death. In how many cases never examined has not a similar cause existed? Reynold's *Medicine* contained a series of fatal cases of abscess of the brain. In over thirty per cent. of these cases ear disease was found to be present. But the danger of extension of disease from the middle ear to the brain is well known to surgeons, who are also familiar with the distress that is caused by secondary otitis.

Infective Arthritis. It is doubtful, however, whether we as yet generally recognize the fact that secondary inflammation in various parts of the body is not infrequently the

direct consequence of infective disease of the ear. My experience certainly supports the opinion of Dr. W. P. Eagleton, of Newark, N. J., from whose paper I venture to quote. He says, "Infective arthritis is of peculiar interest to the otologist, because the original infection frequently comes from the ear." And again, "The ear in fact is the *most* frequent source of *general* pneumococcic infection in children."

Debility. Anyone who has had much experience of ear troubles must be able to recall numbers of cases whose vitality had been greatly impaired by the chronic poisoning that is generally the direct result of infective ear disease. I can remember one case whose vitality was at the point of final exhaustion when admitted to hospital. She was sent in on a stretcher, unable to walk, pulse at the wrist hardly perceptible. Though she said she had been under treatment at two hospitals, the ears were full of growths, but it was some time before I dared remove them under an anæsthetic. Her complete recovery to robust health is to my mind a sufficient proof that the condition described was the result of chronic blood poisoning and of nothing else.

The following cases selected from my note book are examples of some not uncommon complications of infective ear disease.

Eczema. F. 63. Had been under treatment for inveterate eczema of ears and face. This had persisted for many years. The auricles were much thickened, and the meatal orifices would only admit the finest of probes.

She was decidedly deaf and had had otorrhœa. With some difficulty the meatal passages were gradually dilated: the middle ears were both in a septic condition. Antiseptic irrigation proved successful in disinfecting these cavities, and the eczema rapidly disappeared.

Facial Paralysis. F. 60. Whose right ear had been affected with a discharge from childhood, although she had had the advice of several specialists. Recently great pain had been experienced, and the face had been drawn to the left side. The right meatus was nearly blocked by a firm mass, an outgrowth from the posterior meatal wall. This was cut away, and daily irrigation with a solution of salufer was carried out. In a day or two a large cholesteatomatous mass came away, with great relief to the patient. In two months the ear had become sweet, discharges had ceased, and the facial paralysis had disappeared.

Loss of Hearing. The effect upon the hearing of infective disease is sometimes very serious; on the other hand, some people hear fairly well with ears that are discharging and the hearing is often much improved when the ear has been disinfected, though not a vestige of membrane remains. When, however, infective disease spread to the internal ear, the hearing may be looked upon as gone for ever. The symptoms of such extension of disease are very definite, and have been alike in the few cases I have seen. I give two examples:

F. 28. Whose right ear had discharged for years. In September, 1897, she had a severe illness, beginning with great pain in and around the right ear. She had constant vomiting for twenty-four hours, became delirious, and was more or less unconscious for several days. A month later I found the ear full of a foul discharge, with several growths blocking the meatus. On clearing these away, the modiolus of the cochlea came away with the discharge. This ear became quite sweet and dry.

M. 42. Had had a discharge from the right ear for thirty years. In December, 1899, he had a sudden attack of giddiness and pain in the right ear. There was constant vomiting for twenty-four hours, and high fever with delirium lasting several days. Seen by me three months later, I found the middle ear full of growths, and on removing them brought away the cochlea modiolus. Seen in 1906, this patient said he had had no further trouble.

Pain; Sometimes Intractable.

One of the most distressing results of suppurative otitis is the pain, which is often most persistent. In a subsequent chapter I hope to say something about the intolerable pain that is a feature of meningeal complication. But the pain that is caused by disease of the temporal bone may be severe and most difficult to relieve. A case admitted to the Coventry Hospital in 1903 had had the radical mastoid operation performed at St. Bartholomew's Hospital, for the cure of middle ear disease, several months previously.

The operation had not cured the disease, an otorrhœa persisting, and the man complained of persistent and severe pain behind the ear. As the ear was offensive, I re-opened the old wound, with some temporary relief.

Another case of otorrhœa in which severe pain lasted for years, came under my care some years ago. The patient said she had had severe pain behind both ears for many months; she was hardly ever free from it, and often sat up all night. There was extensive disease of both temporal bones, and, in spite of my radical operations, the pain has persisted. I saw the patient last summer; she had been under other treatment; but had not got rid of the pain. Fortunately, many cases that suffer from pain in a diseased temporal bone may be relieved by operation. Amongst such cases the following was one of the most remarkable.

> M. 12. Admitted to the Coventry Hospital in 1904. He had been under medical care for three years on account of a running ear. His sister came to me with tears in her eyes to ask if nothing could be done for him. She said the boy had suffered terribly for months. After a week of sleepless nights, the girl walked twelve miles to see if a hospital could do anything for her brother. On admission the boy had a temperature of 103°, with extensive otitis. In this case an operation gave immediate relief, and the patient made a good recovery.

The pain that comes on in the course of a chronic otorrhœa, if very severe, is generally the consequence

of extension of the disease to the bone or membranes of the brain.

Blindness. In some cases, fortunately not common, loss of sight appears to be secondary to infective disease of the ears. Some years ago a case under treatment for suppurative otitis suddenly went blind. The radical operation had recently been performed. This seems to have started an auto-infection. The temperature ran up to 105°. There was double optic neuritis, and the patient could see nothing for several days. Anti-streptococcus serum was injected, and at the end of a week the serious symptoms subsided. The sight gradually returned. A case I have had more recently was less fortunate.

> M. 20. Was admitted to the Coventry Hospital with the history that he had had a running ear since childhood. He had not had any treatment for it. A year ago he began to complain of headaches and pain at the back of the ear. Six months later the sight began to fail, and, in spite of treatment at an eye hospital, he become quite blind. The condition of the optic discs was that of commencing atrophy. He stayed with us some months, but we could do little for him. An interesting feature in this case was the fact that he seemed better whenever the ear discharged freely, and his general condition somewhat improved after an otectomy that was done for the relief of the ear condition.

Otectomy has given relief in several cases of secondary meningitis, and if we accept Sir Victor

Horsley's views as to the effect of intracranial pressure upon the optic nerves, there is a special reason for resorting to an operation that relieves intracranial pressure.

It would be possible, of course, to write at great length upon the secondary results of suppurative otitis. One could give cases of general and fatal pyæmic poisoning, and a large number in which more or less troublesome complications attended direct extension of the disease to the neighbouring parts. But it will be well to conclude this chapter with a reference to the mortality of ear diseases, as estimated by Max Levy.[1] He says that patients suffering from chronic ear disease are nearly always refused by insurance companies, but some societies are prepared to accept the risk, providing that the applicant undergoes treatment. Such statistics as can be afforded by these societies as to the average mortality are, of course, quite valueless. Orth's material of the post mortem room in the Berlin Charité shews that between 1881 and 1905 about 0.6 per cent. of deaths were ascertainably due to intracranial suppuration caused by middle ear disease. Considerable as this figure must be thought, it only includes the mortality under one of many complications that may ensue from disease of the middle ear. The lowered vitality that is the inevitable companion of chronic infective disease of the ears is responsible for a still larger death roll.

1 *Deut. Med. Woch.*, March 28, 1907.

CHAPTER II.

IRRIGATION OF THE EAR WITH NON-POISONOUS ANTISEPTICS.

It has been said that living organisms contaminate every wound, and that if it were not for the germicidal activity of the tissue cells, every wound would suppurate. In the wave of enthusiasm that accompanied the acceptance of Lister's views on the treatment of wounds, the importance of the tissue cell as the chief agent provided by Nature against tissue poisoning, was sometimes forgotten. For a long period it was the custom to use poisonous antiseptics in the treatment of wounds, and even now I see the advice is given to treat otorrhœa with solutions of corrosive sublimate or the bin-iodide of mercury. In February, 1908, a leading chemical firm could write as follows:

> Despite its highly poisonous nature, and the dangers associated therewith, Perchloride of Mercury is still greatly preferred for the purpose of general disinfection. In support of this preference is to be urged its excellent disinfectant action, its absolute freedom from smell, its cheapness, and also the circumstance that, metallic objects excepted, it does not attack or cause injury to the articles to be disinfected.

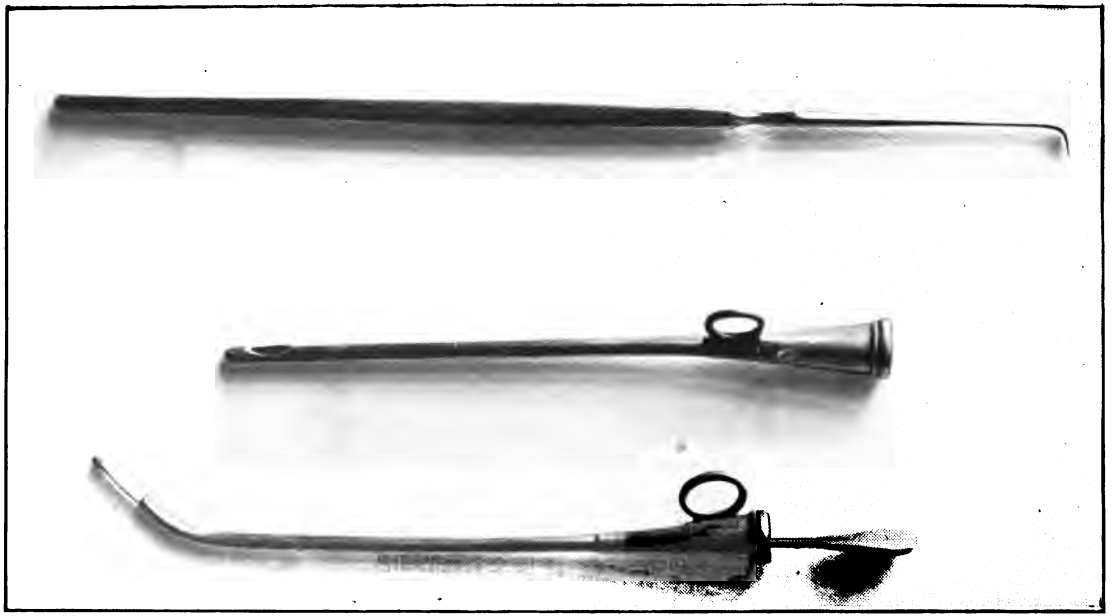
Best type of Ear Syringe with suitable Nozzle.

(In 1906 the Medical Defence Union successfully defended a medical man against an absurd charge of malpraxis, one of the alleged misdemeanours being that he had used a Higginson syringe for irrigation of the ear!)

There have been most serious cases of general systemic poisoning from the use of mercurial douches, and some local poisoning of the tissue cells always takes place when poisonous antiseptics are introduced into the tissues. It is probably easier to destroy the vitality of the tissue cell than it is to kill a germ. The complete destruction of a germ colony would seem to be difficult to effect by antiseptics. A careful investigator has recorded the results of various experiments in disinfection of the hands. Different antiseptics were chosen, including all the most popular ones, and cultures were made from skin scrapings after a thorough use of these disinfectants. In every case a culture shewed that disinfection had been incomplete, though, on the other hand, the skin of a washerwoman who had been at the tub for several hours, was found to be practically aseptic. This triumph of soap and hot water is a point of some practical importance. A lecturer on otology has written that to syringe a running ear is merely to provide nourishment for the thirsty germ plants; but the less said about such teaching the better. There is abundant evidence of the value of hot douches and fomentations in the treatment of poisoned tissues. Personally, I believe that we may increase their efficacy materially by the addition of a non-poisonous antiseptic, such as salufer (silico-fluoride), or acetozone. Dr. Abercrombie used to favour sulphate of soda, and I have sometimes used it or the sulphite, either alone or in conjunction with salufer. There is no doubt in my mind that salufer excites tissue activity, and its effect in many cases of poisoned wounds has been very striking. A

case recently admitted to the Coventry Hospital is a good example of the rapid healing that often takes place when salufer is used. The man's hand had been caught under a heavy stamp. With the exception of the thumb bones and the second metacarpal, every bone of the hand had been pulverised; the skin hung in several strips, discoloured and separated from the pulp beneath. The crushed parts were removed, the bases of the metacarpal bones being saved, and the best bits of skin were used to cover in the wound. During the operation at least a dozen bowls of salufer solution were used to wash the parts. Now, this stump healed at once without inflammation or pain. It might have been the healing of a clean operation wound in a carefully prepared part. I have published more than one case in which there has been a remarkable recovery in an apparently hopeless injury to a joint, and in which the use of salufer has seemed to be of very great assistance. It may be said that such cases would have done as well with other treatment; but at any rate it is a fact that severe injuries and filthy wounds have done remarkably well when salufer solutions have been used. On the other hand, the treatment of poisoned wounds with dry antiseptic dressings has led to a great deal of unnecessary suffering. The natural effort of the tissues to throw off poison is materially assisted by fomentations, whereas a mechanical difficulty is superadded if the parts are kept dry by artificial means. And this is as true of poisoned ears as of poisoned tissues in any part of the body.

If this view is correct, it follows that the most



1. Mr. Faulder White's Otitome.
2. Mr. Faulder White's Canula for Irrigation after Otectomy.
3. Mr. Faulder White's Attic Probe and Introducer.

reasonable treatment of an infected ear would be that of assisting the tissues to throw off the poison by the use of hot douches. And if we can use lotions that stimulate the tissue cells, whilst they depress germ vitality, we shall still further assist the process of cure. And, above all, we shall avoid, if possible, having recourse to those severe operations with the burr and chisel, which must seriously depress tissue vitality. It is certainly true that for many years the routine treatment of otorrhœa has been the use of the syringe, and it is generally admitted that much of this routine treatment has been of little use. Yet I am as firm a believer in the value of irrigation for infective ear disease as ever.

Early this year, Mr. Yearsley, in a letter to the *Lancet,* suggested that I had given up irrigation. This is far from being the case. I still look upon the syringe as the most useful agent we possess in the work of cleansing an infected ear; and I will here reprint some paragraphs from a paper that appeared in the Transactions of the Sixth International Otological Congress. These remarks, written in 1899, express views that I still hold, though since then I have found we can do more to assist the process of cure by intrameatal removal of diseased tissues, than at one time was thought safe or practicable.

"The attitude of the medical profession in England towards suppurative otitis media is still unsatisfactory; patients are still being told that there is no cure for running ears, and that it is dangerous to meddle with them. On the other hand some aural surgeons recommend extensive perforations of the bone. In

uncomplicated cases I believe these operations to be generally unnecessary, and most will admit that they are dangerous, and do not always effect a cure.

The importance of this disease was not at one time at all generally recognized. In my student days cases of so-called simple otorrhœa were never admitted to the hospital wards. They were treated as out-patients, being usually given a bottle of mild lotion with which to syringe the ear.

Now of one thing I am firmly persuaded, that to effect the cure of these cases requires regular and frequent skilled attendance, and that when that is given good results may be obtained without a radical operation. For some years past I have been in the habit of admitting cases of suppurative otitis to the wards of the Coventry Hospital for treatment by frequent washings with antiseptic solutions. Other cases are attended to by a trained nurse twice a day in the out-patient department. In private practice, too, I prefer to carry out the treatment myself, and not to leave it to some friend of the patient. The fact that this point has not usually been insisted on is sufficient to account for many failures in treatment.

I think it not unlikely that I shall be told that the syringe has been tried over and over again, and that some pronounce douching to be of little use. I am aware of that.

While attending the Section of Otology at the 1895 meeting of the B.M. Association, I heard Professor Macewen's paper, in which he challenged otologists with their failure in this disease. I have noted the practical failure of vicarious syringing in the work of

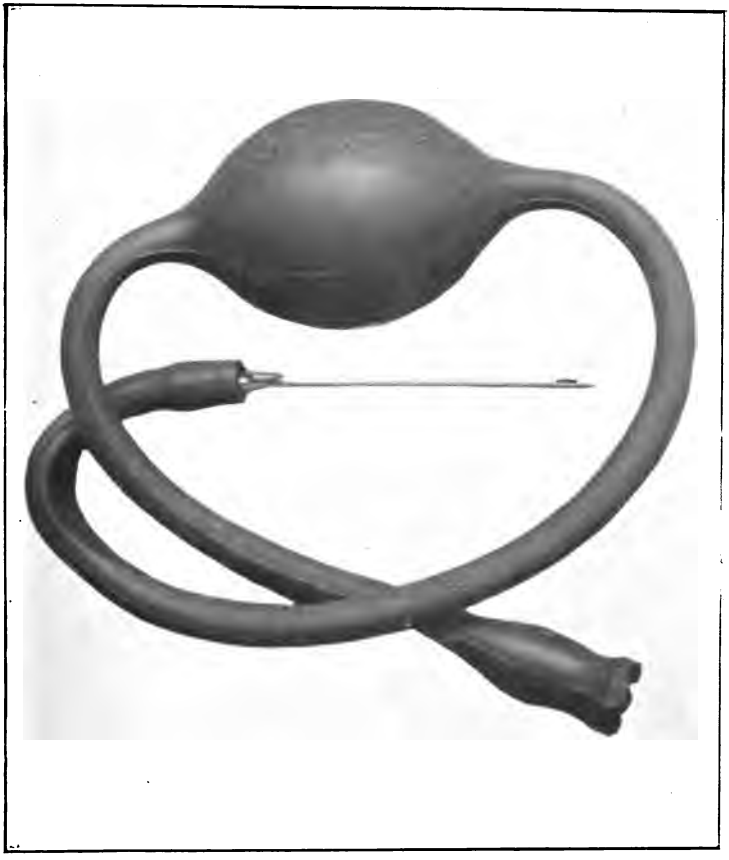
an aural department of a large London hospital. As a practitioner I have seen may cases of long standing that had been syringed without any good results by trained and untrained attendants. Notwithstanding this, I have for a long time held that the mechanical and vital difficulties attending the treatment of suppurative otitis by antiseptic irrigation are generally surmountable by care and perserverance. And experience has confirmed that opinion. The principle of my treatment is simple, namely, to purify the diseased parts, and to arouse the dormant vitality of the poisoned tissues.

Considering the size of the cavities affected, the meatus may be compared to a very large drainage tube provided that there is a large perforation in the membrane. This is fortunately present in the majority of cases, but when there is only a small one I believe the right course is to enlarge the opening, and this I have done in a few cases with some success.

Although our special interest in the middle ear inclines us, perhaps, to magnify its area, I would lay stress on the fact that the cavities affected in suppurative otitis media are really quite small, and the inter-communicating passages or spaces comparatively large. So long as disease is confined to these spaces, and has not affected the bone, I believe it may be reached, and consequently influenced, by injections through a large perforation. Even when the bone is affected a cure will sometimes follow simple irrigation. I recently reported a case in which there was exfoliation of the modiolus of the cochlea with complete recovery. Anyone who has treated many poisoned wounds with

hot baths or fomentations must have observed how wonderfully the tissues are thereby assisted in throwing off the poison, and though we cannot place a poisoned ear permanently under similar conditions, we adopt the same principle of treatment, and obtain the same results by using hot antiseptic irrigations. I do not use the brass or glass syringe, but prefer the india-rubber Higginson. By means of this we can inject an almost continuous stream of fluid with a minimum of shock to the tender parts. As a stimulating disinfectant I know nothing so good as the silico-flouride of potasium. I use the saturated solution diluted with from one to six parts of hot water. This solution is well tolerated by the tissues. I have used it extensively in surgery, and believe it to be preferable to corrosive sublimate, which probably depresses tissue vitality."

The usual nozzle sold with a Higginson syringe is not generally suitable for ear work. It is, however, easy to exchange it for a finer one. Whenever possible, however, I use my tympanic canula instead of a nozzle. This is a simple straight tube made of silver, and closed at the end, but which has an opening close up to the end. After an otectomy, or when there is a large perforation in the membrane, the end of this tube can be passed into the cavity of the tympanum. By simply turning the tube on its own axis, fluid can be injected in any direction. Without such an instrument it is generally impossible to wash out the attic cavity. Another little instrument that is of some assistance in the toilet of the ear is an attic introducer and probe. The introducer is a silver tube with an



Higginson Syringe with Mr. Faulder White's Canula for intra-tympanic irrigation.

open end; the last third of an inch is curved, and, by this means, we can pass a fine steel probe through the tube into the upper cavity of the ear. The end of the probe is roughened, and serves to carry wool with any preparation we may desire to introduce.

It is certainly true that many cases of chronic suppurative otitis have been cured without operative interference of any kind. And there are even now some otologists who would agree to that statement. It is, however, perhaps necessary to insist upon this fact, because there are specialists who still teach that there is no real cure for this disease without a radical operation. I would ask such men if they have themselves given a thorough trial to irrigation with a Higginson syringe and a tympanic canula, if they have themselves persevered, even once a day, with such solutions as those of salufer or acetozone, if they have tried such measures in conjunction with intrameatal removal of diseased tissues. If they have not so persevered, they are not in a position to speak authoritatively on the subject; nor should they ignore the fact that, by means of irrigation, successful results have been obtained in a large number of cases. It is true that may cases of infected ears are most difficult to treat successfully, and require a great deal of persevering care. Pecuniary considerations stand in the way of successful treatment sometimes.

Many people prefer to run the risk of dangers they only imperfectly apprehend rather than spend money upon professional treatment. Such considerations send many to the quack institutes, where they are promised a cure for a pound or two. There is no trouble

about examination or attendance, no question of operation; it is all absurdly simple. I have seen several people who honestly believed they had exhausted the resources of "science" by a correspondence with the Drouet Institute. Possibly doctors do not take sufficient trouble to dissuade their patients from wasting their time and money on ignorant pretenders. As it is often the innocent child that has to suffer, the family medical man should speak seriously as to the duties of parents. There is no doubt that many lives are sacrificed every year to the meanness of parents, who will not put their children under medical care until too late. Most doctors could bring forward instances of such criminal neglect; and, usually, it is the doctor who is blamed in the end. The above remarks refer to people who can and should afford efficient medical attendance, and not to the poorer classes.

This matter of money has a very distinct bearing on the question of the treatment of otorrhœa. To begin with, it furnishes an explanation of the fact that few specialists in large towns have made an extensive trial of personally conducted irrigation. People will not generally be willing to pay two or three guineas a day for any considerable period. My interest in the subject has induced me to do much of this work without remuneration, because people who were charged often abandoned treatment in the first week.

So long as prominent otologists taught that there was no cure for chronic suppurative otitis save in the radical operation, any attempt to adequately deal with the thousands of children so affected must have seemed

hopeless to the medical authorities of our schools; but it is probable that the profession will not much longer be deceived by such erroneous teaching, however authoritatively pronounced. What is needed is the establishment of institutions, private and public, where children can be taken in and be attended to by a staff of specially trained nurses under skilled supervision. Under such conditions irrigation would secure satisfactory results in a large number of cases. Though in acute disease of the ear much suffering may be caused by ill-advised syringing, in the chronic stages of otorrhœa irrigation, when carefully carried out, practically never gives rise to any considerable disturbance. Many thousands of irrigations have been done by myself, or my assistants, and I have never observed extension of the disease as a result of such treatment. The temperature of the solution should be tested by thermometer, and should not be below 97 or above 100 Fahr. If these limits be exceeded, giddiness may be complained of. I have had very little trouble from giddiness during irrigation, but can remember one lady who complained of being upset for the day by syringing: we got rid of the difficulty by only irrigating in the evening.

At the commencement of treatment we must proceed with caution. The diseased ear will not often tolerate at first an interference which, later on, will occasion no disturbance. In some cases it is better to begin treatment with drops of some mild antiseptic, such as a solution of boro-chloretone; and this is especially the case after operative interference. When irrigation is commenced it is well to use a weak solution of

acetozone or sulphite of soda; later on, a solution of salufer will generally cause little or no disturbance. Though I have somewhat insisted on the inadvisability of frequently subjecting the tissues to the influence of poisonous antiseptics, their occasional use may be of assistance; but I deprecate the use of such a strong poison as corrosive sublimate. I think, however, that the occasional use of mercurol (gr. ii. ad ʒ i), or of protargol (gr. X ad ʒ i), is sometimes of assistance in disinfecting the ear. I am also becoming convinced of the value of the oil of eucalyptus in these cases. I use it with almond oil (five per cent.) In cases that cannot or will not attend for treatment I believe it is safer to advise the use of these drops at home than to encourage any form of home syringing, which is rarely efficacious and sometimes disastrous. Not long ago a lady succumbed to the effects of a poison that she had absorbed from her son's running ear, to which she had been attending. It is well to remember that the discharge from a running ear is generally very poisonous.

As the most striking feature of infective ear disease is its tendency to persist, it is only natural that active treatment is generally required before this tendency can be overcome. And cases that do not yield to irrigation twice daily will sometimes yield to irrigation every six hours. Cases that have persisted in the hands of one assistant will sometimes quickly improve when transferred to more capable hands.

Septic inflammation in the ear is of course not essentially different from septic inflammation in other parts of the body, and should be treated on ordinary

surgical principles. An abscess at the root of a tooth is best treated by the removal of the tooth, and not of the jaw bone surrounding it. Yet the jaw bone

ERRATA: On page 20 for "mercurol (gr. ii. ad ʒ i)" read gr. ii. ad ℥ i. And in place of "protargol (gr. X ad ʒ i)" read gr. X ad ℥ i.

a powder the properties of which render it suitable for insufflation. Extremely light, it will reach the farthest cavities through the smallest passages. I have often seen the traumatol smoke emerging through a mastoid opening, when it has been blown into the meatus.

Whenever the ear has been disinfected, ordinary care and cleanliness will usually prevent reinfection; but it is well to keep cases under observation for a considerable time, as disinfection may have been incomplete. This is probably why some otologists say that these cases usually relapse. It is probable that such relapsing cases have never been thoroughly disinfected. It is comparatively easy to dry up a discharging ear without any real disinfection. Such treatment is for the time satisfactory to the surgeon and his patient, but it is not without danger to the patient, and has nothing of the nature of cure.

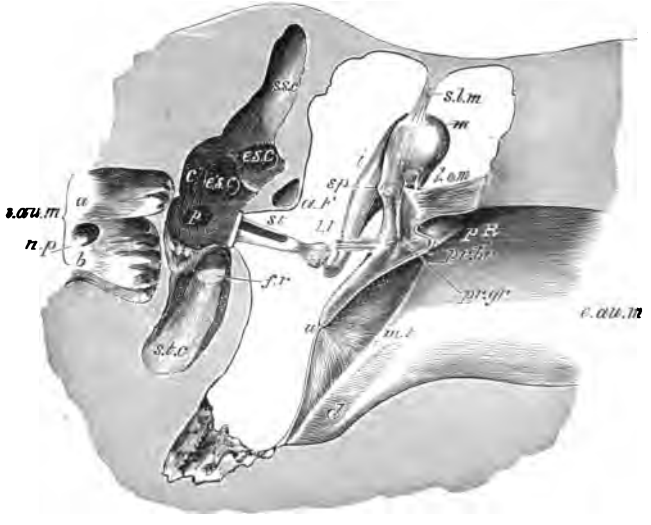
CHAPTER III.

THE REMOVAL OF THE MEMBRANA TYMPANI AND OTHER DISEASED TISSUES FROM THE MIDDLE EAR.

WHEN an erroneous belief or doctrine has been generally held for many years, it is exceedingly difficult to eradicate. As an instance of this fact, one can bring forward the old popular teaching, of which Savile Kent wrote in "The Great Barrier Reefs of Australia":—

> Notwithstanding the wide diffusion of knowledge which includes a smattering of many 'ologies, it is astonishing to find how tenacious an influence ancient tradition concerning coral organization still exerts on the public mind. The poetic fallacy of coral reefs being built up by an association of insects is frequently enunciated from the pulpit and in the pages of the daily newspaper.

It is probable that an equally erroneous belief with regard to the "drum" or drumhead of the middle ear will be as difficult to eradicate from the minds of the multitude who believe it to be an essential organ of hearing. Even medical men have said to me, "Surely you cannot hear without a drum?" This mistaken idea, apparently so deeply rooted, has been of great assistance to the various vendors of artificial



A Section of Left Ear showing Ossicles.

m, hammerbone; *i*, anvil; *st*, stirrup; *mt*, membrane of tympanum; *e.au.m*, external ear passage; *i.au.m*, passage for auditory nerve on its way to the brain; *s.l.m*, *l.e.m*, ligaments of hammerbone; *f.r*, round window; *s.t.c*, part of cochlea; *p*, in vestibule; *e.s.c*, *s.s.c*, *i.s.c*, semi-circular canals; *a.F*, passage for facial nerve. *Enlarged (Quain).*

drums, and, though I am aware that we may occasionally improve the hearing by giving artificial support to a perforated membrane, I do not think the purchasers of "ear drums" have often had value for their money. They are certainly aids to infection. Recently, I removed a most offensive artificial drum from a middle ear. It is the more extraordinary that any medical man should share in the common delusion, because a very little inquiry would reveal the fact that many ears possess very fair hearing, though hardly a vestige of membrane remains, and the further fact that the removal of a diseased membrane or its remains will often lead to distinct improvement in the hearing. It may seem unnecessary to elaborate further, but, in the existing confusion of otological teaching, it may be useful to refer to the writings of a well-known professor of Zoology, Ainsworth Davis. In his "Natural History of Animals" he says that "the organs of hearing consist of two divisions, (1) the *essential* parts containing the end organs, and (2) certain sound conducting arrangements." Amongst mammals, the sound conducting arrangements consist of the drumhead and a chain of little ossicles that convey vibrations to the probably essential membrane of the inner ear. It is interesting to observe that in birds, which certainly possess good hearing, the chain of ossicles in replaced by a single straight bone, the columella; and that in many vertebrates the sound conducting arrangements are altogether absent.

When the membrane of the tympanum and the other sound conducting apparatus are in good condition, they doubtless serve a useful purpose in perfecting

audition; but there is reason to believe that the human ear would have been an excellent organ of hearing had the ossicles and drumhead never been developed! The membrane of the tympanum undoubtedly serves a useful purpose in health as a protection to the middle ear. In diseased states of the middle ear the membrane is often an obstacles to efficient treatment, and, what is more serious, the membrane will often conceal disease existing in the cavities within. In a recent case that puzzled some of our best neurologists, a post mortem examination revealed meningitis, secondary to middle ear disease, that had been concealed by perfect membranes.

Comparatively slight changes in the membrane or in the ossicles will seriously affect the hearing, for when the efficacy of the conducting apparatus is impaired, this very apparatus serves as an obstacle to the passage of sound. This being the case, it is easy to understand that great importance has been attached by otologists to the condition of this membrane, and perhaps it is not surprising that so many people have fallen into the error of supposing that the membrane was all-important to the hearing. The fact is that unless the conducting arrangements of the middle ear are in good order, their presence is generally detrimental to the hearing.

The fact is of great importance with regard to the measures that may be adopted for the disinfection of a septic ear, for in some cases it is exceedingly difficult, if not impossible, to disinfect the cavities of the middle ear without removing a portion of the tympanic membrane. The extraordinary tendency to

re-formation of the membrane in many cases in which it has been perforated by the surgeon or by disease is well known, and cases are to be seen every day in which there is serious disease affecting the cavities, with only a minute opening in the membrane. Sometimes, indeed, disease exists behind a membrane that has completely healed. It is a fact not very creditable to our common sense that many of such cases have been treated by routine syringing, sometimes for long periods.

But I think it is a fact that the average medical student rarely receives much otological instruction, though he may have opportunities of witnessing wonderful operations on the temporal bone.

In all seriousness, I would express my admiration for the perfection to which the radical mastoid operation has been brought by some surgeons. Though I have been represented as being entirely opposed to any such drastic interference, such is not by any means the case. But I hold the view that, as the large majority of infected ears may be thoroughly disinfected by simple measures, less dangerous to the life, the features, and the hearing, the routine adoption of the major operation is altogether improper. And I am glad to see that some of our best men are beginning to reconsider this important question, and that their attitude of hostility to intrameatal treatment is beginning to relax. Drs. Hill and Milligan, however, who introduced the discussion at Exeter on intrameatal treatment, in a reference to my views, are reported as having expressed the opinion that such methods as those I advocate might possibly be of

service in mild cases, but that intrameatal treatment cannot be expected to lead to a permanent cure. They are quite mistaken. That under efficient intrameatal treatment the most virulent cases of suppurative otitis have completely recovered is a fact; it is also true that many of these cases had been under treatment for long periods without relief, and that many of these cases have remained to the present time perfectly well.

In the early days of my aural practice, it was fairly easy to impugn the permanence of the results of my intrameatal treatment; but, as the years go by, I can point to increasing numbers of cases that have stood the test of time.

But to resume, one condition is essential to the success of intrameatal treatment, it is that there should be a sufficient opening in the membrana tympani. In some cases, no doubt, a small opening suffices, and such simple treatment as that suggested by Dr. Blagdon Richards, the use of a solution of boracic acid in glycerine and water, may succeed in disinfecting an ear of which the vitality of the tissues is still considerable. This solution Dr. Richards simply pours into the ear. I have adopted a similar method of late years, using a weak solution of mercurol and chloretone, or of the oil of eucalyptus; recently I have used Dr. Richards' mixture in some cases, and am inclined to think well of it. But though it is well to try the simplest means first, there are many cases of suppurative otitis that demand more active treatment. The question as to how much interference is necessary is not generally easy to answer; certainly not before one has examined the

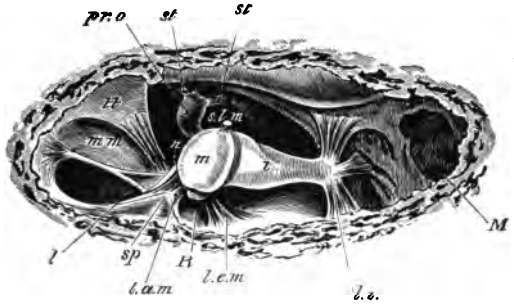


FIG. 1.

Fig. 1.—Cavity of the Tympanum, opened from above.

m, head of the malleus or hammerbone; *i*, body of the incus or anvil; *li*, ligament of the incus; *l.e.m*, *l a.m*, *s.l.m*, ligaments of the malleus; *tt*, tendon of a muscle; *mm*, fold of mucous membrane; *st*, stapes or stirrup; *pr.o*, process of the incus.—*Enlarged (after Quain)*.

FIG. 2.

FIG. 3.

Fig. 2.—Right Bony Labyrinth viewed from the Outer Side.

1, vestibule; 2, oval window; 3, superior semi-circular canal; 4, external semi-circular canal; 5, posterior semi-circular canal; 6, 7, 8, cochlea; 9, round window.—*Enlarged.* Fig. 3 shows natural size.

middle ear after removal of the membrane. No one can immediately form a correct estimate of the powers of recuperation possessed by the tissues of any individual, a matter of greater importance, in my opinion, than the particular variety of infecting germ. The actual condition of the patient at the moment gives little information as to his tissue vitality; cases that had been reduced by chronic poisoning to a dangerous extent have made a rapid recovery, while apparently slight cases have proved very persistent.

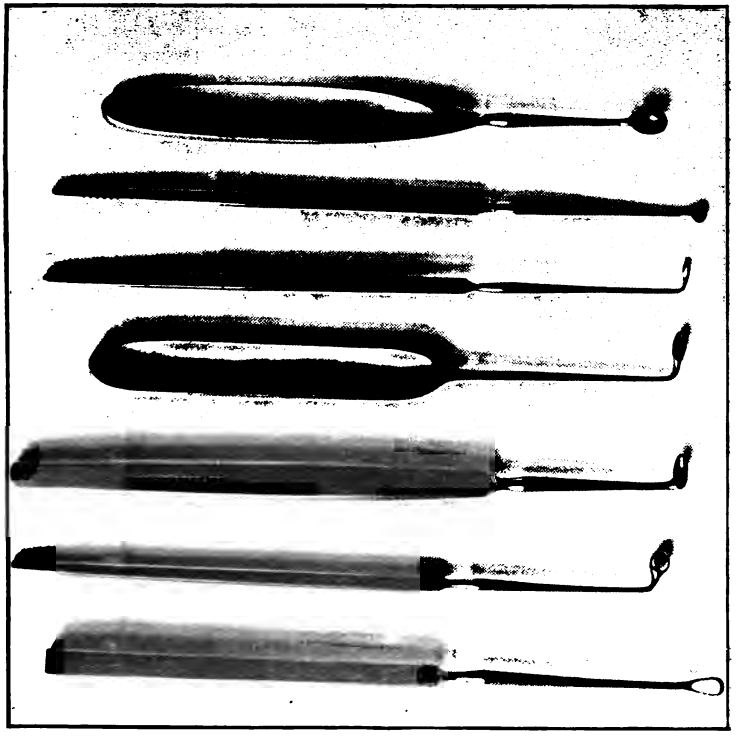
It is well then, in the absence of acute symptoms, to keep the patient under observation before deciding upon interference, and to treat the ear with drops; or, if there is a sufficient opening in the membrane, by syringing with a mild antiseptic solution. In many cases, though the discharge be offensive, a slight enlargement of an existing perforation will enable the surgeon to wash away the foul contents of the middle ear, and to secure complete disinfection of the ear in a very few days. In such cases the perforation will often heal completely. The tendency to re-formation of the membrane or to healing of a perforation may be so great as to interfere with treatment, the cavity of the middle ear becoming closed to irrigation before disinfection has been completed. In such cases one should not hesitate to do a secondary operation. I had reason to regret this omission some years, ago, in the case of a child whose membrane healed very rapidly under irrigation. I had doubts at the time as to whether disinfection had been effected, but, as the child was living with me, contented myself with the intention to keep the case

under observation. A few months later, without any further warning, alarming symptoms of meningitis set in, and though the child recovered after otectomy, which was immediately performed, I have not forgotten the lesson.

It is very bad practice to encourage the healing of a perforation before one is certain that the cavities of the middle ear are disinfected. Even if the hearing were the only consideration, it would be very mistaken treatment. The best course for the preservation of hearing is that which secures disinfection of the ear with a minimum amount of disturbance to the special organs of audition. That such intrameatal interference as I have found necessary generally fulfils these conditions is supported by the fact that several of my patients still possess greatly improved hearing, in ears that have been operated upon on more than one occasion. Several cases have had both ears operated on.

Recently, I have had the opportunity of examining seven patients who had otectomy performed on both ears, more than a year ago. They all of them have improved hearing, and six of them have little or no difficulty so far as conversation is concerned.

1. f. Could hear my watch at 6 inches on each side.
2. m. Could hear my watch at 6 inches right, and 10 inches left side.
3. f. Could hear my watch at 4 inches on each side.
4. m. Could hear my watch at about 11 inches on each side.



Spoons and Curettes.

5. m. Could hear my watch at 4 inches on each side.
6. m. ,, ,, at 6 inches on each side.
7. m. ,, ,, at ½ inch on each side.

These are not selected cases, but the only ones on which the double operation had been performed, more than a year ago, that I have been able to see. Another case wrote quite recently, saying he has "splendid hearing," and has had no trouble at all in the last four years. It is perhaps only fair to otectomy to remark that this man, as well as two of the others, had been through much unsuccessful treatment previously.

Those who recognize the capital importance of securing disinfection of the aural cavities will agree that where the simple measures mentioned above fail in their object, it will be advisable for the surgeon to take further measures to secure disinfection. And such operative interference I prefer to include under the term otectomy, which simply implies "a cutting out from the ear," though I am told that similar removals have been performed under the misnomer "ossiculectomy." But as the removal of one or more ossicles may or may not be included in one of these operations, it seems objectionable to give the name of what is only sometimes a part of the operation to the whole. But I deal with this matter of nomenclature in an appendix.

In a large proportion of my otectomies I have found the walls of the middle ear and attic affected by secondary caries, whereas the ossicles were generally healthy. Mr. C. T. Heath, who advocates an operation which, as I understand his description,

leaves the middle ear alone, says that the antrum is the cavity to be especially attacked in the operative treatment of suppurative otitis. My own belief is that the antrum is generally the last portion of the aural cavities to be seriously involved, (see appendix), and the fact that most of my cases have recovered without any operative interference with the antrum, strongly supports this view. But one may refer to the opinion of Dr. A. L. Whitehead, who has performed a large number of radical operations. As reported in the *British Medical Journal's* account of the discussion that took place at Exeter, he said:

> A few years ago a great wave of operative enthusiasm swept over the country, and he was rather encouraged to perform radical operations on these cases, following the example of Ballance and others; and although he cured his patients, *he often found very little disease,* and frequently the hearing was lessened. The wave was now passing away, and he thought they should give credit to those who had helped to repress this excessive operation enthusiasm.

The remarks of so able an otologist as Dr. Dundas Grant on this occasion may also be considered.

> He was much struck by noticing a statement of Mr. Heath's that attic disease could not be differentiated from that in the tympanum, and that both were dependent upon mastoid disease; while Professor Politzer, on the other hand, said that in an overwhelming majority of cases of attic disease, the suppuration was localized in the outer attic. Many of these cases could be perfectly well treated through the

meatus without opening the antrum or mastoid cells.

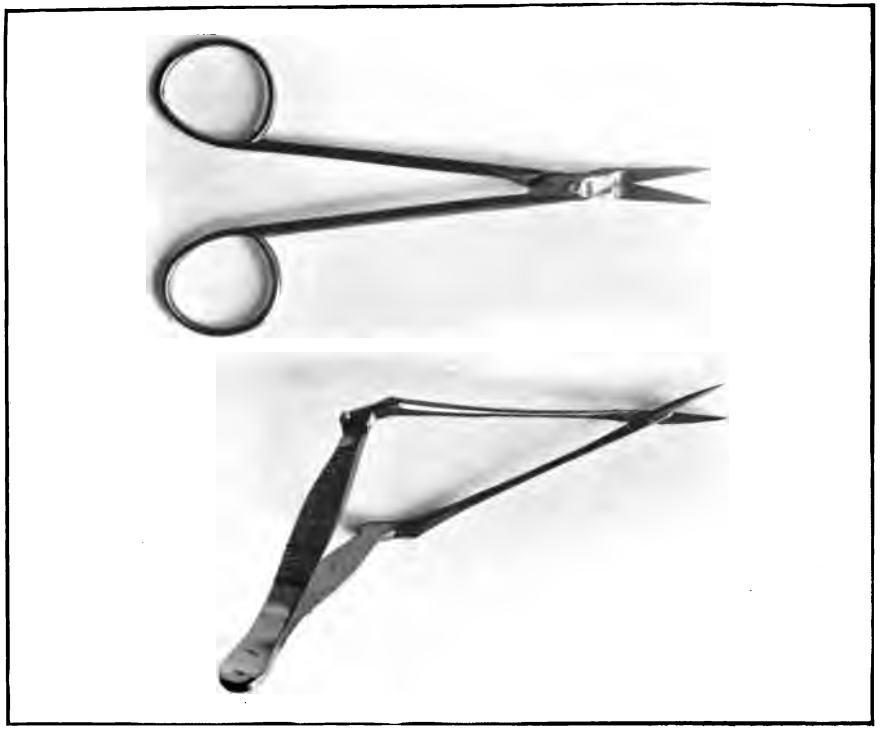
Other speakers also testified to their belief in the value of intrameatal treatment, and I cannot now help feeling that much good might have been effected if their views had been pronounced on this subject some years before, when I was attacked for my criticism of the fashionable treatment of the moment. It was not a light matter to criticize the teaching of a celebrated man like Mr. Ballance, who wrote in the *Lancet* that intrameatal operations were dangerous and unsatisfactory. It was not altogether pleasant to occupy a position of isolation at the Otological Congress of 1899, when I protested against the decision of the meeting. I could not have persevered in the absence of any support had I not known from actual experience that intrameatal treatment was generally successful. The discussion at Exeter showed that some well known otologists now hold similar views to those that I have published from time to time with regard to suppurative otitis, and to the use and abuse of the radical operation. The reader will by this time have arrived at the conclusion that extraordinary differences of opinion still exist as to the treatment of chronic suppurative otitis. We have those who believe that there is no real cure save in a radical operation; we have Mr. Heath's curious teaching which, in a mistaken regard for the sanctity of the membrane, leaves the chief seat of disease untouched; and there are still existing some aural specialists who advise against operative interference, even in cases that have not improved under any other treatment.

One reason for this difference of opinion is to be found in the great variety of cases that the aural surgeon has to treat. Every degree of virulence is to be met with; the tissue vitality is always an uncertain factor; and the extent to which the disease has penetrated varies from case to case. In some of the cavities affected we may find a mass of foul granulations, in others we find perhaps little alteration from the normal condition of the parts, while in other cases there may be considerable portions of the bony walls carious or necrosed.

Surely there is much to be said for the practice of treating every case as far as possible on its merits, and much to be said against the performance of a set routine operation in every case.

I maintain that we should endeavour to disinfect these diseased ears by methods that are simple and safe, and that do not in any way prevent our having recourse to more radical operations, if such should prove necessary. Three years ago I showed that my efforts at intrameatal disinfection of the ear had met with considerable success. In this book I give another series of consecutive cases.

In the event of the simple treatment, as mentioned in the foregoing pages, failing to improve matters, and in many cases it will be waste of time to attempt treatment by antiseptic drops, the proper course to take is, in my opinion, to remove the membrane and examine the condition of the middle ear. It will generally be well to remove the malleus, as this facilitates the complete removal of the membrane and ensures a better opening into the attic cavity.



1. A useful Forceps for Aural work.
2. Mr. Faulder White's Ossicle Forceps.

The membrane should be cut out with a sharp knife with a rounded end; but before doing this I usually divide the external ligament of the malleus with a special knife (otitome), the blade of which is set at an angle like a keratome. The membrane and malleus may then be easily removed with suitable forceps. In some cases nothing further is required, in others it may be necessary to remove portions of necrosed bone, or masses of granulation tissue. Cholesteatomatous material may generally be sucessfully removed through the meatus. I have on one occasion found the stapes loose in a mass of granulations, and on four occasions I have taken away the modiolus of the cochlea that was lying in the debris contained in the middle ear. The carious patches so commonly existing in the walls of an infected middle ear should be freely scraped. As regards the incus, I have often removed it, but, like the other ossicles, it is comparatively rarely diseased, and my present practice is to leave it in the majority of cases. As its removal is sometimes a little difficult, the operation is so much the more simplified by its retention. With regard to the removal of a portion of the outer attic wall through the meatus, this can be effected in some cases by means of a small finely finished chisel, but this should never be done unless the surgeon can introduce a sufficiently large protector into the attic cavity; a packing of wool will materially increase the protection. Of course, this is one of the steps of a complete radical operation, (Stacke), and there is a good deal to be said for the argument that it is better to attack the attic wall

through a larger wound at the back of the ear. On the other hand, there is a great difference in severity between the two operations; an otectomy that includes removal of part of the attic wall taking perhaps fifteen minutes. It must be remembered that, so far, no death has been the result of an otectomy, whilst the facial nerve has escaped injury in every one of my cases. Otectomy hardly ever produces that unfortunate effect upon the auditory nerves which is often caused by a radical operation, and which I believe is due to the necessary violence exerted upon parts in the immediate neighbourhood. I have only observed marked loss of hearing after otectomy in three cases out of the hundreds I have performed.

I have only occasionally removed a portion of the outer attic wall through the meatus, and must object to being described as "a warm advocate of intrameatal atticotomy." I think it would be a very bad practice in the majority of cases, for the simple reason that it is not often required. In some cases of extensive disease the patient refuses to have an opening made behind the ear, and in some of them an intrameatal removal of the outer attic wall may be advisable as giving additional facilities to the surgeon for clearing away diseased tissue.

In the performance of an otectomy, the bleeding causes some inconvenience to the surgeon, and it is essential that properly prepared mops should be ready at his hand. The wool should be well teased out, and attached to the roughened end of the probe by a clean and practised hand, the end of the probe being well protected. If the wool is too loosely attached it comes

off in the ear and causes much loss of time. It is well to irrigate the cavities during the operation with a hot solution of acetozone. This washes away the blood and so saves much mopping. Adrenalin is occasionally required in cases that bleed much. After the operation, I wipe out the cavities with a solution of eucalyptus in almond oil (1 in 16), and then blow in traumatol. Finally, I insert a small silver tube, as near the size of the opening into the middle ear as possible.

The after-treatment will of course depend upon the progress of the case. My present practice is to interfere as little as possible with the ear during the first few days, merely using a solution of boro-chloretone, some warm drops of this being allowed to flow into the ear two or three times a day.

CHAPTER IV.

MEDICAL INSPECTION OF SCHOOLS IN CONNEXION WITH DISEASES OF THE EAR.

AMONGST my out-patients recently was a woman who handed me a letter, which ran as follows:

> Dear Madam.—On visiting ..... School, I noted that your son ..... has some deafness. It is advisable that you should obtain some medical advice concerning this if you have not already done so.
>
> I am,
>
> Yours faithfully,
>
> .....
>
> Medical Officer, Education Dept.

The child was partially deaf in one ear and had fair hearing in the other. The faulty ear showed an old perforation, but the cavity was sweet and healthy. In such a case any careless interference might do far more harm than good; but I have known home syringing to be advised in similar cases, with the result that the ear became re-infected. A believer in the value of irrigation in many cases of otorrhœa, I have often had occasion to wonder at the general resort to the syringe in all sorts and conditions of ear disease; for in many cases syringing the ear can only do harm, and much unnecessary suffering is

sometimes caused by syringing in acute otitis, with or without perforation. The detection of ear disease is easy enough in many cases, but by no means so in all. Apart from diagnosis, it may be asked whether most general practitioners are in a position to deal adequately with cases of ear disease. The average medical student, it is to be feared, pays little attention to otology. A fairly long series of house surgeons have all agreed that they had no practical knowledge of ear diseases. The absence of facilities for the treatment of ear diseases in most hospitals must seriously hamper teachers of otology. Students are keen critics, and the failure of out-patient treatment in hospitals which only provide a limited number of beds for aural cases, has, I know, disappointed the most ardent of students, and sent them to other departments of hospital work. It may be easy to appoint medical examiners for the Board schools, but I doubt very much whether there is available the requisite number of men who have an adequate knowledge of ear disease. It is easy to test for deafness; but many children have fair hearing, although they have middle ear disease. It is also easy with a little practice to detect a perforation in the membrane, but it is common to see cases in which disease is progressing behind a perfect membrane, and this is not always easy to detect. In the following chapters there are cases given in which this occurred.

Although there are many otologists, it may well be asked whether otology has yet attained to the position in our science and art to which it is entitled by its importance and the special difficulties which attend

its practice. These very difficulties and the differences of opinion as to treatment, of which they are the cause, may account for the considerable distrust of the ear specialist that is sometimes exhibited. Even the new university of Birmingham almost entirely ignores this branch of science. In its long list of professors and lecturers there is no one to represent otology. In the book of the syllabus the only reference to otological teaching is to be found in the "Information concerning Hospital work," and consists in the statements that demonstrations of the ear and throat are given every Friday. On the other hand, several pages are devoted to dentistry. This is not as it should be, for diseases of the ear are not of secondary importance, and, as Professor Pritchard once said, present problems urgently requiring elucidation. If improvement is to come, it must be through the efforts of those who are endeavouring to overcome the difficulties inseparable from the treatment of ear disease. It is, however, always well to recognize facts, and I have, therefore, given some reasons for believing that radical reforms in otological teaching and practice are required before the medical inspection of children can effect much good, so far as diseases of the ear are concerned.

But the reports of almost any of our great hospitals will furnish evidence that the prevalence and importance of ear diseases are not fully recognized. Take Guy's Hospital for instance. Here, there are no less than eight anæsthetists, six dentists, and four surgeons for the eye department. One surgeon is considered sufficient for the aural department and for the teaching

of otology, and what makes the case still more striking is the fact that this gentleman is a member of the general surgical staff, and therefore can only devote a portion of his attention to diseases of the ear.

It is important to remember that the best of treatment cannot secure results unless facilities are afforded. Whatever treatment be adopted, cases of otorrhœa will not do well unless they are kept under skilled observation. The irregular attendance in the out-patients' department of many people under treatment is the cause of much failure. Probably the best plan to meet the difficulty would be that of providing institutions in healthy localities for the treatment of otorrhœa. As we have to depend so much upon tissue vitality, the importance of good air and good feeding is very great. Such expenditure would give a good return to the community that sanctioned it. The talented author of "The Doctor in the Schools," Dr. Hackworth Stuart, has made some valuable remarks on this subject, which I may perhaps be allowed to quote. He says:

> There is no condition, amongst children, more commonly neglected than that of running ears. This discharge itself is a very fertile source of disease.
>
> Rising from their soiled pillows with dried discharge about their hair, these children come to school to spread trouble among their mates by contact and by poisoning the air they have to breathe. Exclusion from school is not helpful in securing treatment, as the children are only too useful at home.

One reason for the difficulty here is the amount of perseverance required in, and the comparative ineffectiveness of, the routine treatment most commonly meted out to such cases.

Should school clinics become developed, those in charge, keeping in touch with numbers of children throughout school life, will have an opportunity of formulating the most effective methods for dealing with this trouble, and its concomitants, and of judging of the final results achieved by "otectomy" lines of treatment as compared with modified "mastoid" procedures. No medical man could now condone non-treatment of running ears or lend support to the hope of growing out of a condition which is a constant source of danger to the life of the possessor, as well as a depressing influence on the health of those around.

The manner in which Life Assurance Companies regard this affection, either in activity or as a matter of past history, should be more widely known.

At a discussion which took place in January, 1908, at the Warwickshire County Council, the Chairman, Lord Algernon Percy, made some pertinent remarks on the proposal to appoint two medical examiners to the County schools. He said that he felt in a somewhat difficult position, for, as a matter of fact, he did not think the resolution quite met the case. He thought if they considered and looked at it carefully, they would see that they were on the eve of a very big business indeed, and in his opinion it would be very unwise to appoint these officers. It

seemed to him that the time was coming when it would be necessary to reconsider the whole question of administration as regarding sanitary and medical matters throughout the County.*

It certainly seems to me that it is of little use to point out disease, unless we can at the same time provide a means of efficient treatment. It seems almost cruel to tell parents their child is diseased, and not to assist them further. It seems absurd to pay medical men to discover diseases, if the treatment, a hundred times more troublesome, is to be left to the gratuitous services of an already over burdened hospital surgeon. For that is what is likely to happen; the majority of practitioners will certainly send patients of the Board School class, if suffering from special diseases, to some hospital. It must also be remembered that the assertion that out-patient treatment of ear disease is not satisfactory has never been contradicted; and the further fact that in-patient accommodation for aural cases is not a twentieth part of what is required, will be admitted by any aural surgeon of experience. Yet it must be insisted upon that the great majority of infected ears can be cured, if facilities are afforded. It is the duty of those in authority to provide facilities.

Under the Education Act of 1907, local authorities have the power

> To make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools. Provided

* *Birmingham Daily Mail.*

that in any exercise of powers under this section the local education authority may encourage and assist the establishment or continuance of voluntary agencies, and associate with itself representatives of voluntary associations for the purpose.

One cannot but feel that a strong hint is conveyed in the foregoing paragraph to the local authorities, that the existing medical charities, the hospitals, are available. But one may ask if the hospitals are going to be relied upon for the general treatment of Board School children, whether such use of the hospitals would not amount to an abuse of these charitable institutions. Such an abuse would necessitate an entire reconsideration of their position by the honorary medical staff. As it is, there is reason to believe that the poorest section of the community are sometimes crowded out of the hospitals, which were intended, first of all, for the relief of the medical necessities of the poor. I, for one, strongly dissent from the view, once put forward by the Secretary of a London hospital, that a hospital was not the proper place for the destitute sick to have recourse to.

CHAPTER V.

MENINGITIS, THE RESULT OF NEGLECTED OTORRHŒA.

THOUGH people are generally very anxious about their hearing, should it show signs of failing, they seldom exhibit great concern about a running ear, unless it occasions pain or deafness. They know something about appendicitis, and I have heard such things discussed as Mr. Arbuthnot Lane's extraordinary operation for the relief of chronic constipation. But suppurative otitis, one of the most common and dangerous of diseases, excites little general interest. In this connection it is interesting to notice that the most industrious quacks, who find deafness so profitable a field for exploitation, leave infective diseases of the ear severely alone. And as, strangely enough, the public get most of their instructions in medical matters from quack advertisements or those concerning patent medicines, sufferers from otorrhœa often live in happy ignorance of the more serious troubles that may befall them. The traditions of the medical profession have, however unintentionally, done more to foster the general ignorance of the public on matters of vital importance to their health. Many medical men hold this view, and recently *The Practitioner* wrote as follows:

In regard to this matter, we may be allowed to deplore the attitude which the Scribes and Pharisees of the profession have taken up in regard to it. Like the obscurantist churchman of old, they will not have the people educated. Their view is that medicine must be treated as a mystery, which only its priests may handle, and medical knowledge must be in the keeping of a sacerdotal caste. As we have pointed out over and over again, it is only by the gradual education of the public that great reforms are practicable, for the profession can do nothing without the co-operation of the people. But the people cannot co-operate unless they know how to do so, and this they cannot learn unless they are taught. Who is to instruct them but the doctors, whose very title means "teachers." The people crave for knowledge, as is shewn by the eagerness with which medical topics are discussed in the papers. If they are discovered with little knowledge, the reason is that the people getting no counsel from those who alone can supply it, seek it from lying oracles. "The hungry sheep look up and are not fed," because Smith is afraid that Jones will advertise his food as the best. And so the procession wraps itself in its own virtue, and lets people perish for lack of the knowledge which it is its duty to give them.

As I have known of several cases, fatal from secondary meningitis, in which the original disease of the ear had been neglected through ignorance, the

above remarks are not perhaps without a bearing upon the subject of this chapter.

I think the term meningitis is applicable to those secondary inflammations which, affecting the dura mater first, too often implicate the deeper membranes as well. The fact that they are most often localized is a very important one, but should not deter us from recognizing the affection as one of true inflammation of the membranes, or meningitis. In more than one case, I have been prevented from attempting to save a patient, because the medical attendant could not be brought to see the connexion between an existing otorrhœa and the symptoms of meningitis. More often I have been thwarted by the ignorance of the patient or by the officious advice of still more ignorant "friends."

It would, I think, be impossible to improve upon the description of secondary inflammation of the dura mater given in Bristowe's *Medicine;* but it might be useful to make a few observations founded on personal experience. I have seen at least three cases of recent acute otitis ending in fatal meningitis before a week had elapsed. These were probably influenzal. It is more common, however, to find meningitis supervening in old-standing cases of otorrhœa. The most striking symptom in the average case is intense pain in the head, horrible pain, for which the sufferer implores assistance. Stupor is another very general symptom. Three cases have been brought to the Coventry Hospital, insensible, having suddenly fallen down; the only known trouble at the time being a running ear, other symptoms of meningitis being later developed.

It may be worth mentioning that two cases of otorrhœa that had refused treatment died suddenly without any apparent cause. Extreme restlessness or delirium may take the place of stupor, or, indeed, accompany it. The temperature and the pulse rate show every sort of variation in this complaint, and many secondary symptoms may appear, some of which will be incidentally referred to in descriptions of cases given in later pages. It is probable that comparatively slight implications of the dura mater take place in many cases of otorrhœa, and symptoms suggesting a chronic meningitis are not uncommon, such as nearly constant headache and mental disturbances. An acute attack of meningitis is sometimes preceded by such chronic symptoms. Though meningitis is a word of painful omen to doctors and patients, the localized disease that is secondary to ear trouble is not necessarily fatal; and though relapses are frequent, I do not think it is necessary to entirely accept the pessimistic views of some authors. In any case, the utmost care should be taken of the patient who is recovering, especially as regards diet and exertion of mind or body, and this care should be continued in some degree for many months.

With regard to the treatment of a complication that is so terribly disturbing and so dangerous to life; the responsibility of offering advice is a serious one. But one cannot do wrong in calling attention to two statements in Bristowe's *Medicine*.

> The supervention of meningeal mischief is very often preceded by or attended with sudden diminution or cessation of discharge,

and

> In the course of the disease symptoms are sometimes relieved by the sudden discharge of pus from the ear.

With regard to treatment, Dr. Bristowe advised

> If there be evidence of accumulation of matter in the tympanum, the membrane, assuming it to be whole, should be punctured or incised; if it be already perforated and the discharge offensive, the cavity should be washed out carefully.

But we should not be content with half measures, when the chief hope lies in free derivation from the ear, which in many of these cases is full of foul granulations, with extensive caries of the surrounding bone. I advocate a very complete otectomy in such cases, removing the entire membrana tympani with the malleus and incus, and very thoroughly curetting the walls of the middle ear and attic. Such an operation can be done in a few minutes, and adds nothing to the gravity of the case, which cannot be said for operations of greater magnitude or which involve opening the cranial cavity. An otectomy will sometimes give immediate relief, even when meningitis has existed for some time, no doubt by lessening tension and securing a free discharge of blood, serum, and possibly pus.

My experience of operations that open into the skull cavity in these cases has been far from satisfactory.

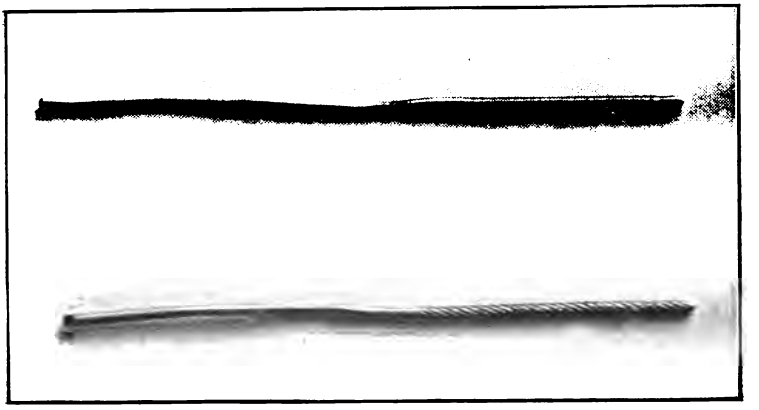
It has been represented that the antrum is the chief seat of disease in suppurative otitis, and that secondary implication of the dura mater is usually the result of extension of disease through the antral roof. I

think this is incorrect, and I have seen little to support the view, either in the operating theatre or the post mortem room. The roof of the tympanum is much more often involved. As Mark Hovell writes

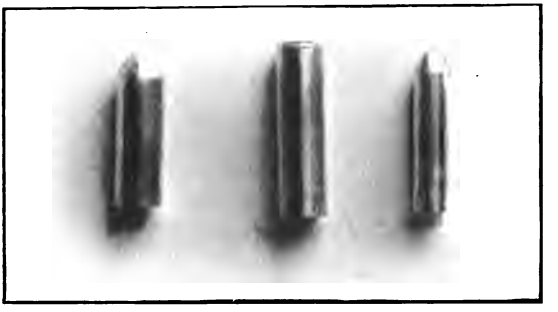
> The roof of the tympanum is often very thin, and the perforation may involve a large portion of it, sometimes there are several small openings, and sometimes the bone is riddled like a sieve. In some instances such openings are in great measure plugged up by cholesteatomatous masses and inspissated pus. The gaps or dehiscences which not infrequently exist in the bone forming the roof of the tympanum obviously favour the escape of purulent matter.

I will now give an account of some cases in which secondary meningitis developed, and in which otectomy was performed.

(1). F. 21. Had had discharge from both ears since infancy. She was sent to the Coventry Hospital in October, 1903, on account of the sudden onset of serious illness. She was very deaf, very stupid and confused, and complained of severe headaches. The temperature was 103.5 Fahr. Both ears were full of an offensive discharge; the membranes showed pinhole perforations. Otectomy was at once done on both sides. The immediate result was excellent. The temperature came down, pain ceased, and the patient's mental condition became quite satisfactory. At the end of three weeks, the discharges seemed quite sweet, and as that from the right ear was very copious, I ordered some slightly astringent drops to be used. Two or



Cotton Wool Carriers used in the toilet of the ear.



Tubes for use after Otectomy.

three days after this, the temperature, which had been normal since the operation, suddenly rose to 103° Fahr., and a rapidly increasing swelling appeared behind the ear. On cutting down, much pus was found beneath the periosteum, and there was a tiny hole in the skull, nearly three inches behind the meatus. A circle of bone was removed with the trephine in this situation, and a little pus was found outside the dura mater, which was somewhat congested. The antrum was next opened, but was found to be free from disease.

The patient made a good recovery, but has had occasional discharge from the ear ever since. She has good hearing on both sides, and keeps well. I saw her in January, 1908, the proud possessor of a new baby.

(2). F. 10. Was brought to the Coventry Hospital in October. 1904, in a semi-comatose condition. Her friends said that she had been complaining for weeks past of severe and increasing pain in the head. She had had discharge from both ears, but not recently. The membranes showed the scars of old but healed perforations. As there was a slight odour in the left meatus, I removed the membrane with malleus and found the cavity behind in a foul state with carious walls, which I freely scraped. There was immediate improvement after operation. The stupor passed away, the headaches rapidly lessened, and in a few days the patient said she was quite free from pain. She left, by request, at the end of three weeks, though I should have liked her to have stayed

longer. However, I saw this girl at the end of three months. She was well, had had no return of trouble; the ear was sweet and dry, and she could hear my watch at three inches.

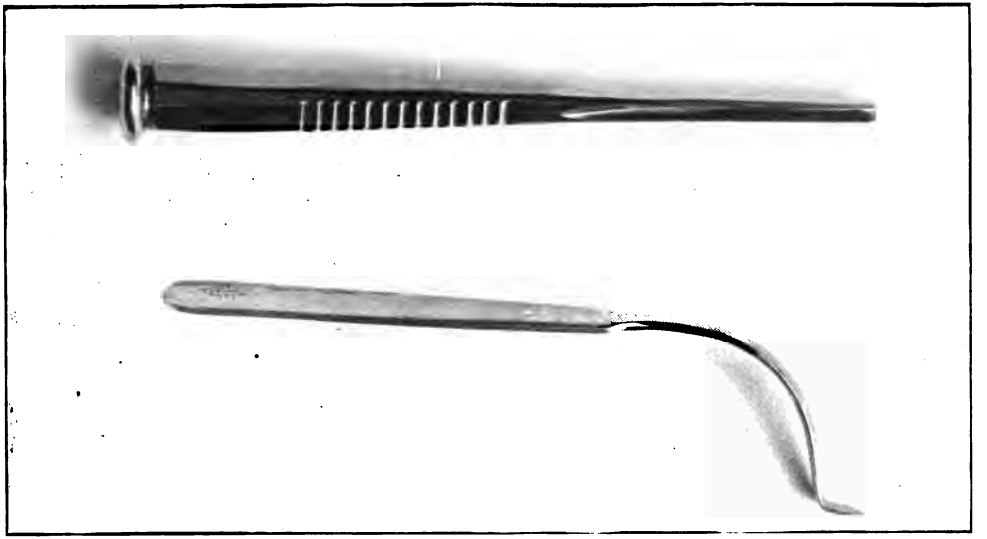
(3). M. 67. Had enjoyed good health, but during the latter part of 1904 complained of severe headache. In the early part of 1905 the headaches became more frequent, and occasional drowsiness was noticed. The symptoms, however, became marked at the beginning of May, the drowsiness passing into a condition of semi-coma. In this condition I first saw him on May 10th: face flushed, respiration irregular, of the Cheyne-Stokes character, much twitching of the limbs, knee jerks absent; ankle clonus well marked; swallowing difficult. Everything was being passed involuntarily. After a consultation with Sir Victor Horsley and Dr. Milner Moore, it was decided to perform otectomy on the left ear, the membrane of which was perfect, but retracted and congested. This I did on May 12th. The relief that followed was most marked, though it only lasted for three days. All the serious symptoms passed off for the time being. The patient recovered full use of his functions, was able to sit up and converse, discussing his case. He said he had had severe earache, occasionally, but had said little about it. The operation had revealed rough carious bone in the middle ear. So marked was the improvement, that on the third day after a breakfast of ham and eggs, he demanded some roast beef for dinner. This was

unfortunately supplied, and in the afternoon drowsiness again supervened, and gradually deepened. A second operation was performed, in which I trephined behind the ear; perforated the dura mater, and searched for pus, without success. No relief followed this operation, and the patient only survived a few days. An examination of the parts revealed two localized patches of inflammation in the dura mater, about two to three inches square, the centres being immediately over the roofs of the middle ears. These patches were of a deep red colour. The brain appeared to be perfectly healthy. It was carefully examined. The roof of the left attic cavity was carious and perforated. The antrum, on the other hand, appeared to be quite healthy. This case had been seen by three well-known consultants, each of whom gave a different opinion as to the nature of the trouble. The ear was not suspected until a casual ramark elicited the fact that the patient was deaf on one side and had once or twice complained of severe earache. The relief that followed otectomy seemed at the time extraordinary. It is possible that had more care been taken in the feeding, a better result might have been obtained. It would have been interesting to have seen the effect of an otectomy on the right side, but unfortunately there was no reason for thinking the right side had been affected too.

(4). F. 11. The same day on which I performed a post mortem examination on the case just

reported, I had to operate on my own daughter for secondary meningitis. Fortunately, the result proved more satisfactory. In the preceding summer I had treated her for an otorrhœa, only irrigation being used, the membrane healing perhaps too rapidly. She had, however, complained of no further trouble until the following May, when she complained of earache, which was followed by a discharge from the left ear. On the 21st, alarming symptoms appeared. The temperature went up to 103.5, and remained high. There were frequent complaints of severe headache and persistent nausea. The restlessness was extreme, though towards evening a condition of stupor supervened. Leeching had no effect whatever. The next day, as the stupor seemed to be deepening, after a consultation with Dr. Banks Price, I decided to do an otectomy at once. I removed a large portion of the membrane, but left the malleus. This was followed by immediate relief. The temperature at once came down to normal and remained there, and the alarming symptoms passed off rapidly. There was, however, much sickness during the first twelve hours. This patient say she has never had any pain in the ear since the operation. She was for more than a year troubled with frequent headache, but may now be described as healthy and well-grown. The membrane is now restored, and she hears the watch at four inches.

(5). M. 20. On November 26th, 1905, this young man fell down suddenly at a meeting, apparently



1. Chisel for intrameatal removal of diseased portions of the attic wall.
2. Stacke's Protector.

unconscious. He was admitted to the Coventry Hospital, two hours later, in a dazed condition. The notes taken at the time describe his gait as staggering, but there was no paralysis or twitching. The previous history recorded stated that he had not suffered from fits, but that he had been under occasional treatment for a running ear "for months at a time," and that during the past two months he had suffered greatly from frontal headache and pain in the left ear. On December 14th the case was placed under my care. I found a pinhole perforation in the left membrana tympani, the discharge from which was offensive. He was in a condition of semi-stupor, the eyes being sunken and dull-looking. He moaned much, complaining of his head. It was difficult to get any sensible answers from him. His temperature was never above 99.5. On one or two occasions he got out of bed, when it was noticed that he could not walk straight.

On December 16th I removed the left membrane and malleus, and curetted some carious parts of the walls of the middle ear and attic. Two days later he told me that his head felt clearer. His general condition certainly improved, and, though headaches recurred from time to time, they became less severe. He became brighter in manner and appearance. A great change was noted in the appearance of the eyes. I determined to keep this case in hospital as long as possible, for I greatly feared relapse, but, in March, he insisted on leaving. The ear was then

sweet and dry, and he had been free from pain for some time. He could now walk perfectly straight. I advised him to keep very steady. However, in ten days time he returned to hospital. He had tried some heavy work, and the headaches had returned. A few days' rest took these away, and we kept him for another month. I saw this case some months afterwards, when he said that he had been pretty well, but I warned him of the necessity for great care for a long time to come. He has now left Coventry.

(6). M. 25. Was admitted to hospital on May 10th, 1906. He was in a condition of stupor, moaning and complaining of his head. Temperature 100°. His friends said that he had been complaining of his head and of giddiness, and was frequently sick. He had had a discharge from the left ear for two months. This had dried up recently, but the ear was discharging some foul matter on admission.

On May 11th an otectomy was done, some carious bone being found in the middle ear. There was steady improvement after this, though occasional headaches were complained of. He left at his own request early in June: too soon in my opinion.

(7). F. 59. On September 27th, 1906, was sent to hospital by a doctor, who wrote, "I have kept this patient as long as possible, I now send her to you." She was evidently in a dangerous condition, semi-comatose, but occasionally moaning "oh my head." There was an offensive discharge

from the right ear. An otectomy was done the same day. The stupor, however, deepened, and the temperature continued to rise; so the next day a more extensive operation was performed. The antrum was opened and the lateral sinus exposed. These parts were found to be free from pus, but a trephine opening revealed a condition of meningitis. No benefit was obtained by this operation. The temperature rose to 105.8, and she died on the third day. She had been treated by home syringing for over six months. There had been no localizing symptoms observable at any time.

(8). M. 13. Was brought to the Coventry Hospital on September 19th, 1906. On admission he was found to be in a serious condition, and could not be roused sufficiently to answer questions. Temperature 101, pulse 76. His mother said that he had had pains in the right ear on and off for several days. She had syringed the ear, which was discharging slightly. An otectomy was done on the same day, without any improvement in his condition, but a quantity of foul pus escaped from the attic. The following day a further operation was performed, when pus was found outside the dura mater; lateral sinus was not thrombosed. The wound was lightly dressed with gauze. No real improvement followed, but certain restlessness accompanied the condition of semi-consciousness. On the 22nd some paralysis of the right arm was noted. The next day some twitching of the face were noticed, and dilatation

of the pupils. Death ensued on the 25th. No post mortem examination was obtainable.

(9). M. 20. Was brought to the Coventry Hospital by the police on November 3rd, 1907. He had been found in a condition approaching complete unconsciousness. The head was somewhat retracted, and his body twitched frequently. There was no smell of alcohol about him. Temperature 97. When seen next morning he seemed rather stupid and complained of severe headache. The head was distinctly retracted. It was found that the left meatus was full of a foul discharge. The temperature gradually rose to 99, but often fell to 97, and the general range of the temperature was below 98. Irrigation of the ear was ordered, and, as he had recently acquired syphilis, mercurials were prescribed. At times he was quite sensible, generally so, but he continued to complain of headache. Pulse was very variable, from fifty to one hundred beats a minute. At the end of ten days the headaches were increasing in intensity, and on the 13th the patient shewed violent excitement, requiring several people to restrain him. This was followed by his falling into a condition resembling catalepsy, in which he lay with dilated pupils, absolutely still, and from which he could not be roused; he seemed to be insensible to all external impressions, and no respiratory effort could be made out. The pulse was then distinct but very slow.

On November 14th I did an otectomy on the

affected ear. The next day he said he felt better, no pain and less headache. The tendency to retraction of the head now passed off. Gradual improvement went on, to be interrupted by a curious relapse on the 26th, when the temperature suddenly went up to 102°, and there was again some excitement. The next day the temperature was again normal and remained at that level. In the beginning of December the patient began to insist that he was perfectly well, and he left at his own request on December 4th. I told him he might expect a relapse if not extremely careful. The condition of the ear was much improved. When last heard from, in March, there had been no relapse.

The foregoing are all the cases in which I performed otectomy for meningal complication of which I have notes; but I remember three cases very well, all of which died before the third day was over. The first case had consulted me some months before, but could not find time to devote to treatment of his otorrhœa. The second developed acute influenzal otitis on his wedding day. There was a very profuse discharge from the ear when I saw him the next day, with a high temperature, great pain and headache. He rapidly became comatose, and died on the third day. The third case was admitted to hospital with symptoms of meningitis well developed. His sufferings from headache were intense. In this case otectomy was done without any relief following.

The observations of M. Rist, made at a meeting of the Societé Medical des Hôpitaux of Paris on June

19th, 1907, help to confirm the opinion I had already formed as to the tendency to localization of the form of meningitis that is secondary to middle ear disease. So important do I consider the results of his work, and of that of M. de Massary and M. Pierre Wiel, that I have obtained permission of the Editors of *The Lancet* to reproduce their article of November 9th, 1907. (See appendix D.) In it may possibly be found an explanation of the fact that cases have sometimes yielded to treatment and sometimes have not yielded. It may, however, be observed that, interesting as microscopical and inoculation experiments may be, and very helpful to the better understanding of these cases, prompt treatment is required, and if otectomy is to be of any use, it should be done as soon as possible.

Before concluding this chapter, it may be well to allude to a class of cases that are occasionally met with. These are characterised by the persistence of chronic symptoms that suggest some secondary meningeal implication. In some cases there may be recurring attacks of sudden loss of consciousness, or sudden vomiting without apparent cause, associated it may be with occasional feverishness and general loss of vigour. One patient would occasionally become quite bewildered by suddenly seeing everything double. But the most distressing result of chronic meningeal congestion from suppurative otitis is severe and persistent headache. One of the most marked cases of this trouble came under my care in 1906.

The patient, a boy of nine, was sent to me on account of long continued and very severe pain in the head. His expression was suggestive of severe

suffering, and I was told that he wept with the pain most nights. He did not complain much of pain in the ear, though both ears were discharging, and the right one was most offensive. The boy was thin and very pale, with deep lines across the forehead. The right ear could only hear the watch on contact. After some trial of simple irrigation and various medicines, without any effect, I advised otectomy on the right ear. This was accordingly done. There was no rise of temperature after the operation, but a very gradual improvement began. In five or six weeks he was transferred to the out-patient department, where he was kept under observation for some months, less and less complaint of headache being made. I then lost sight of him until a few weeks ago, when he returned to request treatment for the left ear, which was discharging. He is now a bright-looking boy, having lost the drawn, suffering expression so noticeable two years ago. The right ear is sweet and dry, hearing the watch at six inches. On February 6th, 1908, I did an otectomy on the left ear. He is doing well, the ear being sweet on February 14th.

Since the above chapter was written, Mr. Arthur E. J. Barker has read a paper at the Royal Society of Medicine on the Possible Uses of Lumbar Puncture in the treatment of Otitic Meningitis. It was pointed out that the frequent unloading of the inflamed arachnoid space of septic products and their replacement by fresh cerebro-spinal fluid was theoretically correct.

Whatever the future may reveal as to the value of lumbar puncture in this disease, there can be no doubt

as to the value of direct derivation from the aural cavities, and there are good reasons for advocating an early resort to otectomy when symptoms of otitic meningitis appear.

CHAPTER VI.

OF THE RESULTS OF TREATMENT BY OTECTOMY AND IRRIGATION.

It is never agreeable to write about the success of one's treatment, but it appears to be necessary to insist upon the value of intrameatal treatment, of which there is now abundant evidence. For there are many otologists who still say that the radical operation is the only real cure for suppurative otitis, and, though none can deny the accuracy of my reports, it has been sometimes suggested that cures obtained by intrameatal treatment are not likely to be permanent.

It is of considerable importance that the falsity of this idea should be demonstrated, for such a belief may be the cause of much unnecessary suffering. There is, at present at all events, no possibility of performing the radical operation upon more than a small percentage of infected ears; and, naturally perhaps, many people will not consent to a radical operation until painful or dangerous complications have arisen. Dr. Gorham Bacon, Professor of Otology, New York, has testified to the difficulty he has experienced in persuading physicians, who consulted him on account of chronic otorrhœa, to undergo the operation: "Knowing the complications that may

arise, they seem to prefer taking chances." Now as otectomy has been proved to be practically without danger, there can be no objection to its performance, if it can be shown that its results are satisfactory.

At present, one has only too much evidence that many medical men are not cognisant of the great value of intrameatal treatment, and of the comparative ease with which cases of otorrhœa may be cured, if treatment is commenced before the bone is involved. Indeed, some doctors never send cases to hospital until alarming symptoms have arisen; and I have known one man condemn my system, because I could not save a case of secondary brain abscess, which he had had under his care for many months. It is not an uncommon experience to have cases sent in to hospital in a hopeless condition, that one could not help thinking might have been saved, had efficient intrameatal treatment been adopted in time.

It is of course easy to raise the question of permanence of results, especially with regard to the health of an organ so easily affected as the ear. The disinfected aural cavity cannot be said to be beyond the reach of disease, and an attack of influenza or a common catarrh may set up a fresh discharge at any time. Such discharge requires treatment lest it should lead to reinfection of the ears. One of the advantages of otectomy is, that should reinfection take place in an ear on which the operation has been performed, disinfection may be readily effected.

In my "Rational Treatment," there was an account of thirty-four consecutive cases of otectomy, that had been under my care more than three years ago. Many

of these cases I know have had no further trouble.* Four, however, have consulted me for a return of the discharge. Three recovered after a few days' irrigation; the fourth attended for a day or two and then disappeared, but in April, 1908, he wrote, "I am pleased to say my ear keeps well and gives no trouble at all."

One of these cases may be shortly described, as it furnishes a good example of the results that may be obtained by perseverance in difficult cases.

M. 26. Had had double otorrhœa since infancy, for which he had been under treatment without relief. He could only just hear the watch when pressed on either ear. In January, 1904, I performed otectomy on each ear. There were masses of offensive granulations in each middle ear, and some cholesteatomatous material in the left attic. The ears became sweet in three or four weeks, but regrowth of granulations made more than one secondary operation necessary. In two months, he left, well, the hearing being very good indeed. This man determined to do what he could to prevent the return of trouble, and has presented himself for examination every three or four months. The ears kept quite well till January, 1908, when a severe cold set up a discharge from the left ear. He at once came to me for treatment, and I believe the ear is now

* In September, 1907, the agent of the Northern Assurance Company told me that his Company had accepted the proposal of one of these thirty-four cases, the case having been operated on in 1904. The patient had not experienced any return of the trouble.

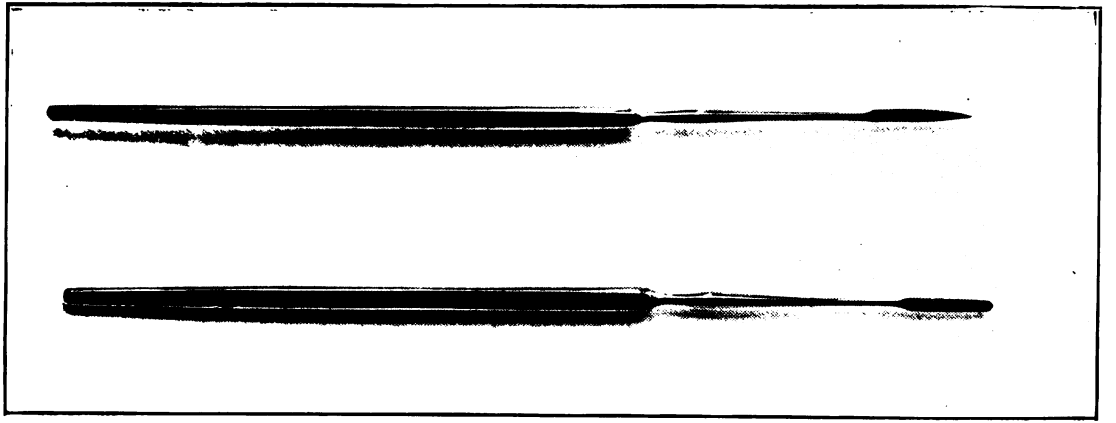
quite well. The hearing is still good, though not quite so acute as in 1904.

Generally speaking, we may expect most improvement in the hearing from otectomy in young people, and in cases in which the bone is not much affected, for granulations of healing bone are difficult to repress in the cavities of the ear, and not everybody will submit to secondary operations. My tympanic tube is often of use in checking the growth of granulations and of secondary membranes. A secondary membrane will greatly interfere with hearing and often closely resembles the original membrane. An otologist recently expressed the opinion, about a case in which the middle ear had been curetted more than once, that no operation had been performed on the middle ear, as the membrane was perfect.

But in the treatment of suppurative disease of the ear, I have only occasionally had trouble from secondary membranes, though possibly the question of the operative treatment of severe catarrhal deafness depends on how we can best prevent or deal with this complication.

Summing up, after an experience of several hundred cases that have been treated by otectomy and irrigation, I may honestly state my opinion that disinfection of the ear may thereby be effected in the large majority of cases, if sufficient time and care is given to the after treatment; and that true relapses are not often met with if disinfection has been complete, and if due attention is given to cleanliness.

I publish below a consecutive series of all the cases in which I performed otectomy for suppurative otitis



1. Knife for perforating the Membrane.
2. Knife for cutting out Membrane of Tympanum.

during 1905 and 1906, and in which I personally carried out the after treatment. I exclude from the category hospital cases, secondary operations, and cases in which after treatment had to be left entirely to others.

(1). M. 16. Had had a discharge from both ears for two or three years. He was very deaf, and as usual, was chiefly concerned about his hearing. The left ear could not hear my watch at all, the right ear could hear it at one inch from the meatus. (It may be as well to say that my test watch is not a loud ticker.) I performed otectomy on each ear in March, 1905. There was much superficial caries of the walls of middle ears and attics. The ears became sweet in the course of six weeks, and in June the patient could hear the watch at two inches from each ear. He was advised to remain under observation, but disappeared, to return in August with some discharge in each ear. Irrigation was carried out at short intervals until December, when the tendency to discharge disappeared. He then had remarkably acute hearing, the watch being heard at quite twenty inches from each ear. I heard from him late in 1907, when he reported that there had been no return of any trouble.

(2). M. 35. Had a very offensive discharge from the left ear. He said he had been under the care, as a private patient, of an otologist for more than four years. He was very deaf on the affected side. After a trial of irrigation, I performed otectomy on January 22nd. The case did very

well, and on February 16th the ear was dry and sweet. My watch could be heard at two inches. I did not see him again until November, 1906, nearly two years later, when he complained of a return of discharge during the past week. The discharge was not offensive, and was probably due to a cold; it yielded to treatment in a few days. He had had no other trouble with the ear.

(3). M. 13. He had been under occasional treatment, including that by a specialist, for several years, on account of otorrhœa. The right ear was offensive, deaf, and sometimes painful. Otectomy was performed on January 14th, 1905. The subsequent treatment was chiefly carried out by the patient's medical attendant, though I saw the case occasionally. At the end of two months the ear was dry and sweet, and the hearing somewhat improved. I heard recently from the boy's mother that the condition of the ear was satisfactory, except for the hearing, which was not good. I have not had an opportunity of seeing this case during the past two years.

(4). F. 11. Has been referred to in the preceding chapter, (case 4). When otectomy was performed, the ear was offensive, but under irrigation it soon became sweet, and has remained so. In this case I had only removed a portion of the membrane. This has re-formed, and now, in February, 1908, there is an apparently perfect membrane with malleus in position. The watch can be heard at four inches.

(5). M. 42. Had suffered since childhood from

infective disease of both ears, and had been under treatment for same on several occasions. He had undergone an intrameatal operation some years ago at the hands of a specialist. He was extremely deaf, there was occasional discharge, and he complained of pain from time to time. His general health was very much affected. There was an offensive odour in each meatus, one of which was dry, the other discharging. In July, 1905, otectomy was performed on each ear, but on different days. There was extensive caries of the bony walls, especially in the attics. The persistent growth of granulations from the bone caused a lot of subsequent trouble, both on account of their keeping up discharge, and of causing interference with the hearing. However, the patient was willing to submit to much secondary curetting, the last being done in January, 1906. In the end, the difficulty from granulations was overcome, and when the ears were examined in February, 1908, the cavities of the middle ears showed no sign of any growth, but were nicely covered in by glistening epithelium. Disinfection of the cavities had been complete, and, with ordinary care, there is no likelihood of any further trouble. There is considerable improvement in the hearing, more than is conveyed by the statement that the patient can now hear the watch at each meatus. His general health has improved.

(6). M. 5. Had had a running ear for more than two years. He was very anæmic-looking and

complained of pain. On July 15th, 1905, the membrana tympani was removed with the malleus and incus. Some foul granulations were also taken away. There was caries of the upper meatal wall, but as this patient became faint under the anæsthetic, I could not carry out a thorough curetting. There was no rise of temperature after the operation, and the pains disappeared. Through a rather long treatment, no further complaint of pain has been made. In September the ear became dry and sweet, and there was no apparent further trouble until July, 1907, when there was a fresh discharge. The middle ear seemed quite healthy, but there was a recrudescence of the old trouble in the meatal roof. I therefore scraped out a carious patch in the bony meatus with very satisfactory result. Seen in January, 1908, the parts were quite healthy. The watch could be heard at six inches from the meatus.

(7). M. 17. The right ear had discharged for several years. It had recently been very painful. The discharge smelt offensively. On July 23rd, 1905, otectomy was performed, much cholesteatomatous material being removed from a very large cavity. There was no complaint of pain after the operation, or rise of temperature, and the case made good progress. But, in the absence of discomfort, this patient thought fit to leave off treatment before one could be sure that the cavities were disinfected. However, in October, 1907, he came to see me again, some discharge having

shown itself. He had not had any pain or discharge since leaving off treatment. The ear was not quite sweet, and I washed away some accumulation of discharge from the large attic cavity. The ear became sweet in a few weeks; but I have advised him to have the cavity washed out at least once a month. He has fair hearing in the affected ear, hearing the watch at five inches.

(8). F. 38. Had had an almost constant discharge from the right ear for over twenty years, in spite of occasional treatment by syringing. The ear was offensive. Otectomy was performed in August, 1905. There was no pain after the operation, but improvement was rapid. At the end of a fortnight the ear was dry and sweet, and there was no recurrence of trouble. Seen in February, 1908, the condition of the ear was satisfactory, except for the hearing. There had been practically no hearing in this ear so long as the patient could remember, and there was no improvement. The auditory nerve had lost its function altogether.

(9). In October, 1905, I performed otectomy on both ears in this case for long standing otorrhœa. There had been much pain. My notes of this case have been lost, but my day book has the entry that when seen in November, 1907, both ears were sweet and dry, and the watch could be heard at six inches from the meatus on both sides.

(10). F. 31. Had been under the nominal care of a

doctor for two years, but the seriousness of the case was certainly not recognized. She came to me for relief of intense pain and giddiness. She looked very ill indeed. The pain in the left ear was said to be at times unbearable. She was very deaf, and both ears smelt offensively. In December, 1905, I performed otectomy on the left ear; much of the walls of middle ear and attic was carious, and one had to be very careful, as the facial nerve was exposed. Though the pain was relieved, this patient made a slow recovery, her condition being indeed very unfavourable. Still, the temperature remained near the normal, until the twelfth day, when it rose to 100 Fahr., and giddiness was complained of. However, the next day she was better, and gradual improvement was afterwards noted. When she left at the end of January, 1906, the left ear was quite sweet. To my regret, this patient did not return for occasional observation or for treatment of the right ear. I asked her to call in February, 1908, which she was good enough to do. The condition of the left ear is quite satisfactory, and she can hear my watch at several inches from the meatus. The right ear, however, is neither dry nor sweet. She says she wishes to have otectomy performed on this ear at some convenient time.

(11). F. 18. Had had a discharge from the right ear for six years, coming on after measles. She had had a polypus removed and some other treatment without any real relief. There had

latterly been considerable pain in the affected ear, and some headache. The ear was very tender, the skin around the meatal orifice being raw and bleeding. There was an unpleasant smell from the ear. She could hear neither watch nor tuning fork at the meatal orifice. Otectomy was performed on January 3rd, 1906. There was very little pain complained of. The ear was sweet on the 24th. Seen on April 15th, the condition of the ear was quite satisfactory. This patient kindly allowed me to examine the ear in February, 1908, though there had been no trouble. The ear was in a satisfactory condition. The watch could be heard close to the meatus.

(12). M. 38. Had suffered from a discharge from the ear for a long time. On January 28th, 1906, I performed otectomy, and carried out treatment by irrigation for about five weeks. On March 8th, the ear was sweet and dry, and remained so for the rest of the time I was able to keep the case under observation. But at the end of April he went away, and I have not seen him since. He was of the opinion that there was a decided improvement in the hearing, though the watch only showed a gain of two inches. He promised to write if there was any relapse, but I have not heard again from him.

(13). F. 35. Had had a running from the right ear since infancy, the ear being very offensive. This patient was practically stone-deaf. Otectomy was performed on the right ear on February 9th. Some pain was complained of on the third day,

so a smaller tympanic tube was inserted in place of that originally used. The ear became sweet during the first week, and almost all discharge had ceased before the middle of March. Seen in the summer, the ear was quite satisfactory, as regards disinfection, but there was no improvement in the hearing.

(14). M. 45. Had had double otorrhœa for many years, and was very deaf. He consulted me as to whether an operation on the ear which was most deficient in hearing would do any good. The other ear he would not have touched. On June 2nd, 1906, I accordingly did an otectomy on the worst ear, finding the walls of the middle ear and attic generally affected with caries. There was a good deal of giddiness complained of after this operation, but, on the whole, the case progressed favourably so far as disinfection of the ear was concerned. This ear was quite dry and sweet when last seen. There was little improvement in the hearing.

(15). F. 20. Had suffered from a running ear ever since she could remember. She had been to two doctors, who told her that it was nothing to trouble about. The ear, however, became more troublesome. On inspection the right meatus was found to contain an offensive discharge. The membrane was sodden and unhealthy, having a small perforation in its upper part. Otectomy was performed on June 3rd, 1906. There was little subsequent disturbance, and the ear was well by the beginning of July. There has been no

relapse of any kind, and I heard on February 11th, 1908, that the ear was "quite comfortable," but could only hear a watch on contact. This, however, indicates a slight improvement in hearing.

(16). F. 29. This lady's health had been unsatisfactory for a considerable time. Without apparent cause she was often very depressed, and her friends made remarks on the gradual loss of health and spirits. There was nothing to account for this until the ears were examined. These were examined because of some peculiar symptoms suggesting some cause affecting the sense of equilibrium. She had had influenza. Neither meatus was quite sweet; the membranes were of a yellowish colour. Otectomy was performed on the right ear in September, 1906, and on the left ear in November. There was extensive caries of the walls of middle ears and attic, and, on the right side, some pale granulations filled up the attic cavity. There was more pain than usual after these operations, and for that reason the tympanic tubes were removed much sooner than usual. Disinfection of the cavities was effected fairly quickly, and there has been no odour or discharge from the ears for several months. In the autumn of 1907, however, she came to me complaining of deafness, and I found that false membranes had formed, and completely shut off the middle ears. I advised their removal. After the trial of some remedies suggested by an otologist, to whom I

sent the patient for a second opinion, and who was not inclined to think removal of the membranes was advisable, it was decided to remove them. There was a very marked improvement in the hearing, notwithstanding that a membrane again formed in the right ear, which I again removed. Unfortunately, this lady is at present suffering from a severe attack of influenza, which has brought on noises in the head, and seriously diminished the hearing—I hope only temporarily. There had previously been observed by this lady's friends, a very general improvement in her health and spirits.

(17). M. 10. This case is mentioned in order to preserve the consecutiveness of the series; but the account must be incomplete, as the notes have been lost. The boy had double otorrhœa, and I operated on the worst ear in November, 1906. In my diary under date, December 8th of the same year, I find the note that this ear was "dry and sweet, the hearing improved." I have not been able to obtain any more recent information.

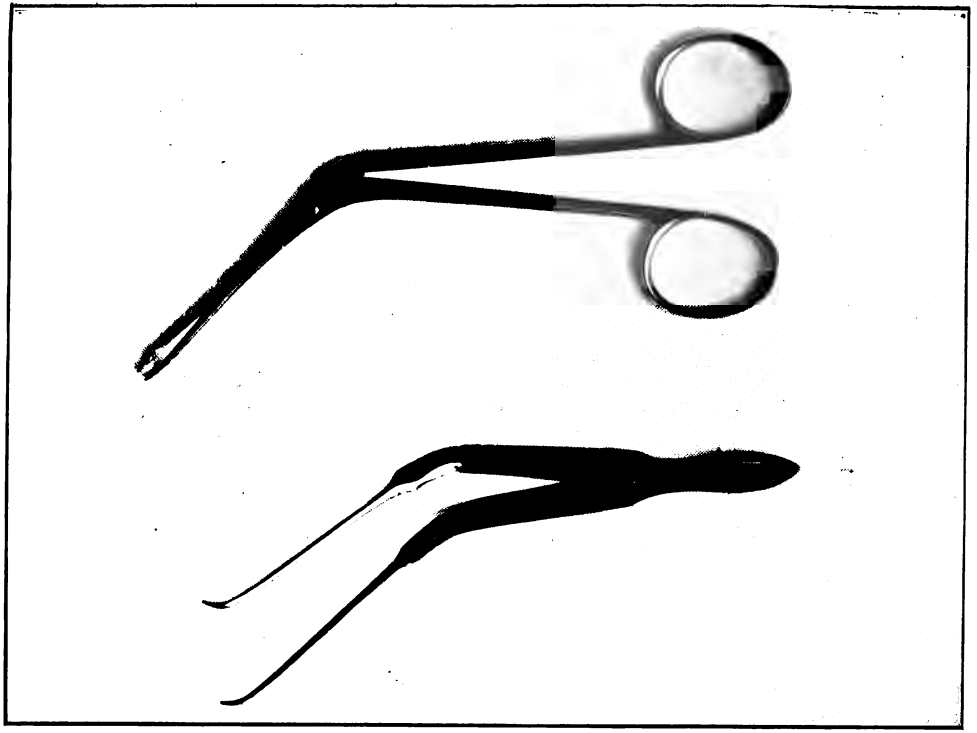
(18). M. 50. Was sent to me for relief of pain in the left ear, which had been discharging for a long time. The discharge was very offensive; there was a minute opening in the membrane. On November 16th, 1906, I removed the membrane and malleus, and also took away a considerable amount of carious debris and granulations from the middle ear and attic. This gave relief at once, and in less than a month the ear became sweet and discharge ceased. In

reply to a letter, this man reported in February, 1908, "I have had no trouble with the ear at all; my hearing is fairly good, but rather dull; I can hear my watch tick five inches away from my left ear."

(19.) F. 35. This lady had been subject to very severe headaches for a number of years. They were of frequent occurrence, coming on in the morning before rising, and often lasting all day. Sometimes she would be incapacitated for days together from this cause. Medicine had very little effect, and, though glasses were prescribed to correct some slight astigmatism, the headaches recurred as often as before. She had not complained to me of the ears, but in the autumn of 1906 she made some complaint of earache, and said it reminded her of her sufferings years before, when she had great pain in the ears and a chronic discharge. On inspecting the left ear, there was the scar of an old perforation, and the meatus had that peculiar "mousey" odour sometimes associated with bone disease. On November 27th, 1906, I removed the membrane and malleus. The walls of the middle ear were carious and partly covered with pale granulations. The "mousey" odour was very marked on removal of the membrane. It was noticed that the caries had affected the bone to a greater depth than is often observed. The bony meatus, however, seemed to be unaffected, and there was never at any time any tenderness over the mastoid process. Though there has been great improvement in the

general condition since this operation, and though the headaches have been less frequent, the condition of the ear has not been altogether satisfactory. The hearing is very fair, the watch being heard at six inches. The "mousey" odour is no longer to be observed; but there has been occasional discharge from time to time and occasional pain. Being convinced that some mischief remained in the attic, I advised the patient to undergo a further curetting, which was done in January, 1908. This secondary operation showed that I was right in suspecting the existence of a carious condition of part of the attic wall. I think it is highly probable that the persistent headaches were a result of meningeal complication, which is far more common in disease of the middle ear than is generally known. Unsuspected concealed disease of the middle ear has been proved to exist in quite a large number of cases, and a chronic secondary meningitis is, I believe, often the cause of much unexplained ill-health.

(20). M. 35. Was sent to me on December 14th, 1906. He had walked a considerable distance to my house, though in extreme pain and hardly able to keep straight. I found that his temperature was over 104° Fahr. He said the pain had lasted for three weeks, and was now quite unbearable. He had been under medical care all the time, but, beyond syringing the ear, I could not discover that anything had been done. The left ear was discharging and was offensive.



1. Mr. Faulder White's Meatal Scissors.
2. A useful pair of Scissors of an older type.

There was great tenderness over the mastoid, and for some distance down the neck. The poor fellow had quite made up his mind that his case was hopeless, but asked for relief from pain. I operated the same day, doing an internal otectomy, and opening into the mastoid behind the ear. The bone was very soft and sodden. Great relief followed the operation, and in less than a fortnight he was practically well. He was, however, kept under observation for another three weeks, when he was allowed to go, the ear being sweet and dry. At my request he came to see me yesterday, (February, 1908). The left ear was quite healthy, part of the membrane having been restored. He could hear my test watch at three inches.

Whether it is due to the fact that the victims of suppurative otitis are of specially low vitality or not, it has been a common experience to have persons on whom one has operated for the relief of otorrhœa, returning with trouble in the other ear. For this reason one often has opportunities of examining the results of treatment some years afterwards, and one is able with great confidence to describe as erroneous the opinion that relapses are generally to be expected after efficient intrameatal treatment of otorrhœa. For I have generally found that the ear which has been thoroughly disinfected after otectomy remains healthy. The following case is an instance of the sort, and has special points of interest.

F. 20. Had had otectomy performed on the left ear in 1903. She was again admitted to the

Coventry Hospital on June 29th, 1905, complaining of great pain in the right ear, which was discharging. Temperature, 99.5. The left ear was healthy and could hear my watch at six inches. Otectomy was performed on the right ear the day after admission. The membrane and malleus were removed with a mass of foul granulations, in which was found the modiolus of the cochlea. The pain passed off rather gradually, but there was no rise of temperature, and the night nurse reported that the patient slept well. On July 8th it was noted that the patient had been free from pain for some days. The ear was sweet—very little discharge. It is quite likely that the inevitable deafness of the right ear will be ascribed to the operation.

The following case may also be considered interesting.

M. 3. Was admitted to the Coventry Hospital in May, 1905, for otorrhœa. There was a very offensive smell from the right meatus, in which a loose body could be felt. Under chloroform a large piece of necrosed bone was removed through the meatus, being delivered with some difficulty. Masses of granulations were also removed, and the carious walls curetted. There was no complaint of pain after the operation, and the temperature remained normal, until the middle of June, when an attack of measles supervened. The right ear was healed at the beginning of July. I have no record of the hearing.

The above case is given because it represents a class

of cases of which I have had several, in which comparatively large pieces of bone are exfoliated during an attack of suppurative otitis. These cases have mostly been young, and the bone exfoliated has been removed through the meatus. In the majority of instances, I believe, it has been part of the inner wall of the middle ear. The mastoid is often the seat of extensive caries, but necrosis of the bone here is not so often seen.

More than one of the patients that have come to me with offensive otorrhœa have had tonsillotomy performed at a large hospital, to which they had gone for relief of the ear trouble. There may have been reasons for tonsillotomy unconnected with the existing suppurative otitis, but I believe that tonsillotomy has been seriously advised as a treatment for otorrhœa, on what grounds it is difficult to imagine.

In these days, when it is actually put forth by some otologists that suppurative otitis cannot be cured without a radical operation, it is a curious fact that I have not during the past three years found it necessary to advise such interference to any of my private patients. Nor even to open up an antrum. In the hospital, where patients are sometimes sent in an advanced stage of disease, operations with the gouge and burr have sometimes been necessary. But even amongst hospital cases, I have not often found it necessary to do a radical operation, and hardly ever, except in cases admitted with secondary complications already developed. During the years 1904—1906, just one hundred and ninety cases of suppurative otitis were admitted to the wards of the

Coventry Hospital. I can only find the notes of one hundred and fifty of these cases. Of these, fifteen were admitted with coarse mastoid disease already developed, and were treated by external operation. One hundred and twenty-six cases were treated without external operation: thirty-six by irrigation, and ninety by otectomy and irrigation. In one of these cases the internal ear was diseased. There were besides, two cases of Bezold's disease, and seven that came under the heading of intracranial complications. The only deaths occurred in the case included in the two last-mentioned categories.

Incomplete as they are, the notes certainly testify to the beneficial effects of treatment by irrigation, with or without otectomy. They furnish evidence of the little disturbance, local or general, that is occasioned by this operation. A rise of temperature above 99.5° Fahr. has rarely been recorded on their charts, and though relief from pain is often noted as a result of otectomy, there are more frequent entries to the effect that "there has been no pain since the operation." The affected ear is sometimes said to have been sweet and dry before the patient left hospital; more frequently the last note has been "transfered to out-patient department—ear much improved." But hospital patients come and go very much as it pleases them, and though one can, of course, learn much as to the results of treatment from a study of some hundreds of such cases, it would be difficult to present a record of them, such as would satisfy a critical reader. For instance, on the question of relapses, the answer of hospital records will always

be incomplete; for this reason, though I know of many hospital cases that have not relapsed, I have thought it more useful to deal with the question of relapse as affecting my private cases, or which I have more complete information.

In answer to the easy assertion that cases may be expected to relapse after intrameatal treatment, I have brought forward evidence to show that relapses in the case of private patients have been very few, after disinfection of the ear by my methods. I have, however, never yet seen any evidence produced to show that cases do not relapse after the radical operation. I have seen several cases at a period subsequent to the performance of a radical operation, and these cases either had never been cured, or had relapsed very badly indeed.

The fact is of some significance that at a small hospital serving a population of perhaps 70,000, some of whom resort for special advice to larger towns, a hundred and ninety cases of suppurative otitis were admitted as in-patients during a period of three years, while a good many others were excluded for want of room. With the exception of urgent cases, a trial of treatment in the out-patients' department was almost always made before a patient received an order for admission. But even at our low rate of admissions, it may fairly be estimated that to provide adequate treatment for the children whose lives are being spoiled by suppurative otitis in the Metropolis, room must be found annually for at least 5,000 in-patients in the aural departments of the London hospitals, unless, of

course, the better plan of country institutions were adopted.

Nowadays, cases of suppurative otitis are admitted to the London hospitals when dangerous, and perhaps incurable, complications have arisen; but not nearly enough is being done to cure otorrhœa in its early stages. This will be admitted by most otologists, but it is not enough to deplore a faulty position: it is the duty of those who have the knowledge to arouse the public conscience, and to call upon medical men generally to work together for the mitigation of a great evil.

APPENDIX A.

SOME REMARKS ON RUNNING EARS.

A Paper written at the request of the Editor of *The Midland Medical Journal,* and now revised.

SOME medical men hold the view of the old Scotch doctor, who is said to have divided ear diseases into two classes: those anyone could cure, and those no one could cure. I think the old professor would have included suppurative diseases in the last category; but such generalization cannot be accepted as correct. Suppurative diseases of the ear may often be cured by the persevering man who adopts efficient methods of treatment.

The chief object of treatment in all cases of discharge from the ear is to prevent infection, or if infection of the ear has occurred, to disinfect the cavity.

In many acute cases of otitis in which a so-called abscess has burst, the ear will get well quickly, if we can prevent infection of the discharges from without. A soothing treatment is absolutely required, and anything like active syringing is contra-indicated. Drops of warm or weak solution of mercurol and chloretone in distilled water (two or three grs. of each

to the ounce) may be placed warm in the ear, and, if the ear is very painful, the mercurol should be omitted. The meatus should be lightly plugged with wool into which some traumatol has been shaken.

Should the meatus be full of discharge, it may be wiped out, or even gently washed out before using the drops; but boiled water must be used, and it is generally safer to dispense with syringing, if the ear is sweet.

In some acute cases there is much pain. Leeches often give relief, and their use should be encouraged in these cases. An opiate is sometimes necessary, and may sometimes be most beneficial.

Poultices should not be used; but a hot water bottle often gives a degree of comfort for which the patient is grateful.

The suffering in acute cases is sometimes much increased by syringing carried out by an injudicious attendant, and it is also easy by such means to cause infection of the ear.

Relief may follow puncture of the membrane in acute otitis, if rupture has not taken place; but this should not be done unless the symptoms are severe and examination reveals a bulging membrane. Antiseptic precautions must of course be adopted if puncture be decided on; and in the case of a child an anæsthetic will be necessary. The operation is quite simple, a point on the lower portion of the membrane being selected for perforation.

Ruptured or punctured, the membrane often heals readily, and if infection has not taken place, the otitis generally subsides. It is the introduction of outside

germs that determines a chronic otorrhœa.

It would be outside the scope of this paper to do more than refer to that destructive form of otitis which spreads with great rapidity to the bone, or to the membranes of the brain. In two or three days large portions of the bone may be softened, and pus may be infiltrating amongst the deep structures of the neck.

In the majority of cases, the specific germs such as those of influenza or of measles will in time disappear, but if the discharge has been infected with skin germs, a new disease is set up, the tendency of which is not in the direction of cure.

It is believed by some health officers that the discharge from an ear that has been affected with scarlatinal otitis, may infect with scarlet fever after many months have elapsed. It is certainly true that the scarlet fever germ has great powers of vitality, but I have had no opportunity of forming an opinion on this matter. This is a question that should be definitely settled, for post-scarlatinal otorrhœa is most difficult to cure, and there must be many such cases in every town.

Perhaps the majority of cases of acute otitis become secondarily infected, and many of them come for treatment with chronic otorrhœa. In such cases we have to disinfect the ear. It is not to stop the discharge, in itself a beneficent effort of nature, that we have first to think about. It is to rid the aural cavities of the germs that have invaded and which are constantly multiplying in these warm recesses. Where there is a large perforation it is often possible to

disinfect the ear with antiseptic irrigations, but this must be carried out effectually. A quart of hot boiled water in which a small quantity of salufer with a little acetozone has been placed, may be used three times a day, by means of a Higginson syringe. Do not use a brass or glass syringe; they are most unsuitable for ear work. Whenever possible, I directly wash out the attic cavity by the help of my attic canula. The ear should be dried with absorbent wool, and a light antiseptic powder, such as traumatol, may be blown into the ear. I have known cases of long standing which became disinfected in less than a week of such treatment: but an otorrhœa usually requires weeks rather than days of careful treatment before it is cured.

In many cases there are obstacles to efficient irrigation. There may be granulations or a nearly complete membrane. Where there is a minute perforation at the upper part of the membrane, it is absurd to attempt to disinfect the middle ear by mere syringing. The aural cavities contain, moreover, bony, muscular, and ligamentous structures. Professor Macewen once said "Be careful how you interfere with granulations in the ear." I hold that diseased granulations should be removed as completely as possible. One frequently sees ears that are full of diseased granulations, that have been syringed daily for many weeks without the least benefit. It is most dangerous for the patient that such growths should be allowed to block up the cavities, prevent proper drainage, and render impossible any efficient treatment. A neglected otorrhœa frequently ends in disaster, and

medical men should no longer content themselves with giving their patients a bottle of lotion with orders to syringe the ear.

Many otologists advocate a radical operation in cases of troublesome otorrhœa, and in some extreme cases no doubt it presents the best chance for the patient. But it is not an easy operation: it has a definite mortality; there is also a special danger of causing facial paralysis. It is acknowledged that the hearing is very often most seriously affected by the radical operation. One has seen several patients whose condition has not been at all improved by the performance of this operation. It is, however, now certain that most cases of otorrhœa can be cured by antiseptic treatment, after the simple operation of otectomy has been performed. Otectomy implies the cutting out from the ear of such diseased tissues as the surgeon may think well to remove.

Otectomy is not of course necessary in every case of otorrhœa, nor is it a sufficient interference in some cases of severe secondary complications. I have found that it is an operation almost entirely free from danger to life or features, and probably the least dangerous to the hearing of any operation that has been devised for the cure of otorrhœa.

APPENDIX B.

A LETTER ADDRESSED TO DR. W. HILL, OTOLOGIST TO ST. MARY'S HOSPITAL, *RE* "OTECTOMY."

Coventry,
July 22nd, 1907.

MY DEAR HILL,

If I needed an excuse for coining the word "otectomy" I might find it in the fact that it required three lines of your letter to name some of the steps of a complete intrameatal operation.

Dr. Hackworth Stuart at the Public Health Congress in advocating the general adoption of otectomy, defined it as "the removal of the diseased tympanic remains and a detailed disinfection of the cavity."

You suggest the term is vague, but it is etymologically correct, and not more vague than arthrectomy with which operation you may compare otectomy. In early references to ossiculectomy I have found it described as an operation for the removal of a diseased ossicle, or ossicles, rather than as a deliberate attempt to remove all diseased tissues from the infected cavities. The ossicles are less often affected than the

walls of the middle ear, and I think there is a practical disadvantage in applying the old term to operations that include the removal of disease wherever it may be possible to remove it, and which may, or may not, entail the removal of an ossicle. I maintain there is an advantage in using a general term signifying "a cutting out from the ear" by which we may refer to operations that have necessarily to vary somewhat, according to what we find as we proceed. I have not been able for some years to attend the Association meetings, but in former years I used to attend the Otological Section, and I have heard Professor Macewen read more than one paper, and I heard several discussions on chronic suppurative otitis, but I have never heard anything said in favour of intrameatal operations—I have read papers by Mr. Ballance and others denouncing these operations as dangerous and unsatisfactory. I know some otologists always advise against it, and Mr. Heath recently wrote that otologists are agreed that a radical operation is the only cure for chronic suppurative otitis. Recently Mr. Yearsley has written advising ossiculectomy in certain cases, but till this paper appeared there was reason for thinking that he placed reliance upon the radical operation as the best means of curing chronic otorrhœa. I had, therefore, some grounds for my belief that ossiculectomy was a discredited operation in orthodox otological opinion, and I certainly had no idea of reviving ossiculectomy when I endeavoured to find out the best methods of removing diseased tissues from the middle ear.

It was surely the duty of any otologist who

believed in the value of ossiculectomy, in the face of the great amount of disease and distress occasioned by infective disease of the ear, to inform the profession that the disease could be cured if taken in time and by a comparatively simple operation. But I think I am right in saying that I, alone, have repeatedly and publicly advocated a more general resort to early intrameatal operation.

You say I have written of "my operation of otectomy." I cannot find this expression in anything of mine that I have by me, but if I have written of "my operation" no objection can reasonably be taken, as my methods were entirely built up, without any assistance from anyone else, and in spite of the otological teaching of the moment. The main idea on which my interference is based is that of removing diseased tissues from the infected cavities so far as it is possible. I further think we should ensure good drainage of the cavities, and that we should not attempt more than seems necessary. I have never insisted on any set operation, reliance on set operations having been, in my opinion, a frequent cause of failure in treatment.

I endeavoured to point out in my "Rational Treatment of Running Ears" the lines on which I usually proceed—I fear my literary skill proved inadequate. In this little book I alluded to otectomy as a simple and common sense proceeding based on ordinary surgical principles. Though I am inclined to insist on the value of the principles, I think the exact procedure followed may be left to the individual surgeon, though perhaps naturally, I am in favour of

the technique I practise. I do not think in a letter I can improve on what I have already published, though I have adopted one or two minor modifications. It appears to me that the results of some 500 otectomies show this method to be a safe and satisfactory treatment for the majority of cases of chronic suppurative otitis.

I am,
Yours very truly,
F. FAULDER WHITE.

APPENDIX C.

A COMPARISON.

It is not now disputed, though at one time it was heresy to say so, that the hearing is often very seriously affected by the performance of a radical mastoid operation. In this connection, otectomy compares very favourably with the major operation. As there has not been in my experience one case of permanent facial paralysis after otectomy, this operation must be admitted to be less dangerous to the features than the radical operation, and, for a similar reason, less dangerous to life. Some time ago, Sir Victor Horsley was kind enough to write to me. While expressing a general agreement with my views, he failed to understand why I regarded the radical operation as dangerous.

One must of course distinguish between the danger of an operation and perhaps the greater danger of the disease it is designed to relieve. Still so serious an interference as the radical operation must always have a mortality of its own. When performed as a preventive measure, upon bone that is healthy, in cases where, as Dr. Whitehead has said, there is very little disease, the danger of a radical operation may not be very great, but in such cases I think it is unnecessary.

Even then, an operation which is difficult, takes a long time to perform and endangers the lateral sinus (Broca) cannot be said to be quite free from danger.

When, however, this operation is performed upon infected tissues, when the gouge is alternately working upon infected and uninfected bone, there is a real danger of starting a rapidly spreading and destructive infection.

My experience of this operation is limited and my opinions are founded on what I know of other men's work. In August, 1906, Dr. Adolph Bronner wrote an article on the Modern Mastoid operation,* in which he said, "Many a successful operation has been completely spoiled and the patient has died, owing to careless or bad after treatment."

The "success" of these operations may have given satisfaction to the surgeons who performed them, but the outsider will find it difficult to discover where the success comes in. It is unfortunately true that, in extreme cases of serious secondary complication, the most skilful surgeon will sometimes fail. The disease may have penetrated beyond the reach of the most heroic surgery.

It remains the duty of medical men to point out the danger of delay in otorrhœa, and, if their own treatment does not cure the disease, they should not wait till serious extension of disease necessitates the trial of a radical operation, but should have recourse to the comparatively safe method of otectomy, which has succeeded in many cases of difficulty.

* *British Medical Journal.*

APPENDIX D.

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ASEPTIC MENINGEAL EFFUSION WITH INTACT POLYNUCLEARS IN SUPPURATIVE OTITIS MEDIA.

THE occurrence of what may be called "aseptic pus" (aseptic puriform effusion) under certain conditions has recently been described by French observers, and we have drawn attention to the fact in annotations.* Puriform meningeal effusion has been most frequently observed in syphilitic affections of the central nervous system, such as meningo-encephalitis, menigo-myelitis, tabes dorsalis, general paralysis, and so on. At a meeting of the Société Médicale des Hôpitaux of Paris on July 19th, M. Rist stated during a discussion that he frequently examined the cerebro-spinal fluid by means of lumbar puncture in children suffering from meningitis secondary to chronic otitis media, and was struck with the fact that in a majority no microbes could be demonstrated by direct examination, by cultures, or by inoculations, although the fluid was purulent and contained abundant polynuclears, as in

* *The Lancet*, May 25th (p. 1446) and August 10th, 1907 (p. 398).

the most typical cerebro-spinal meningitis. In a few cases in which a necropsy was made a localized patch of purulent meningitis containing the ordinary bacteria of aural infections was found in the temporal region. The remainder of the meninges, cerebral and spinal, was intensely congested. M. Rist thought that the bacteria remained confined to the localized zone but produced inflammation at a distance, no doubt by their toxins. Aseptic empyemata have been observed in pneumonia and heart disease.* Such aseptic effusions are characterized by the fact that the polynuclears are intact, because they are not damaged in the process of phagocytosis. Whether this rule holds true in aseptic puriform meningeal effusions secondary to otitis media had not been verified until the following case was reported to the Société Médicale des Hôpitaux on October 11th by M. E. de Massary and M. Pierre Weil. A man, aged 41 years, was taken to hospital on August 12th in a state of complete obnubilation. He answered questions only by a murmur comprehensible with difficulty. Eighteen days before admission he began to complain of tinnitus and tingling in the left ear. Ten days before admission he became deaf, and four days before he began to pass into a state of torpor. On admission he appeared to suffer from intense headache, for he constantly put his hands on his forehead. There was general muscular rigidity; the neck was immoveable, and Kernig's and Babinski's signs were present. The left pupil was smaller than the right. The meningeal streak was obtained. There was no aural discharge. The

* *The Lancet*, August 10th, 1907 (p. 398).

temperature was 102° F., and the pulse was 64. Lumbar puncture yielded puriform fluid full of polynuclears. On August 15th an abundant discharge of greenish pus from the left ear was discovered. On the following days the headache and the general condition remained the same. On the 24th improvement began. On September 1st the temperature was normal, and the patient answered questions. Convalescence was interrupted by an attack of mastoiditis which yielded to paracentesis tympani. During the illness lumbar puncture was repeatedly performed. It yielded a puriform liquid. Cytological examination showed almost exclusively intact polynuclears. Microscopic examination of the fluid, cultures, and inoculation experiments never revealed any bacteria. As recovery took place the polynuclears were gradually replaced by lymphocytes. This aseptic meningeal reaction consecutive to suppurative (septic) otitis media may be explained, according to the hypothesis of M. Rist, by a localized zone of infection capable of producing by means of toxins inflammation at a distance. The importance of these observations is considerable. However violent a meningeal reaction, if lumbar puncture yields a puriform fluid containing intact polynuclears its aseptic character can probably be inferred even in the absence of a bacteriological examination. The prognosis is much less serious than that of septic meningitis. In the case related above, the clinical examination pointed to a fatal termination; nevertheless, recovery took place.

APPENDIX E.

A letter to *The British Medical Journal, having* reference to Mr. C. T. Heath's suggested

MODIFICATION OF THE RADICAL MASTOID OPERATION.*

SIR,—There is one point, at any rate, on which I am in thorough agreement with Mr. C. T. Heath, and that is, his advocacy of early treatment in suppurative otitis. But if we could always get these cases in the early stages I do not think there would be any need for a radical operation at all. Antiseptic irrigation and antiseptic soaking through a large or enlarged perforation will assuredly cure most of these cases, if commenced soon enough, and if it is properly carried out.

On some other points I am at issue with Mr. Heath. I think his teaching with regard to the importance of the antrum is wrong. It must be admitted than the original focus of disease is usually in the middle ear, and in my experience the most common complication in long-standing cases is caries of the walls of the middle ear. Mr. Heath suggests that if you cleanse the antrum and provide posterior drainage, the cavity

* *British Medical Journal*, June 8th, 1907.

of the middle ear may be left to itself, and he does not think there is much danger of extension of mischief through the attic roof. This does, however, take place sometimes, and probably far oftener than Mr. Heath believes.

It is not surprising that the suppurative condition has continued in some of Mr. Heath's cases; but what is very surprising is that he does not appear to consider this fact a matter of much moment.*. For my part, I cannot consider any case satisfactory in which a suppurative condition of the middle ear continues. Out of 74 cases of brain abscess, 27 were shown to be due to ear mischief (Reynolds). For myself, I have found that in the great majority of cases the disease may be cured by treatment through the meatus, with or without an otectomy, and in a very small percentage of cases have I had to perforate the bone. Of course I do not refer to those cases that come to me with coarse lesions of the bone. With regard to such I follow Professor Politzer's advice to remove diseased bone wherever you can find it, but leave the healthy bone alone as far as possible.

With the provision of good drainage through the meatus, with antiseptic irrigation and swabbing, hundreds of cases have got well, the antrum becoming disinfected with the middle ear. This little accessory cavity of the middle ear has been most unnecessarily abused by otologists. It is difficult to believe that disease ever originates in the antrum. In its normal condition it does not contain structures that interfere with drainage as does the middle ear. I do not think

* *Lancet*, August 11th, 1906 (p. 357).

its condition often prevents the favourable progress of a case of middle-ear disease.

With regard to Mr. Heath's views on ossiculectomy, I have certainly seen a few cases in which this operation had been performed, years ago, without apparent benefit; but these cases got perfectly well after further treatment, and I am forced to conclude that the after-treatment had not been well managed at the time. But as the removal of an ossicle is not an essential step in an intrameatal operation for the cure of otorrhœa, I prefer to use the term "otectomy," which signifies a cutting out from the ear, and as every case should be treated on its merits, in one case, all that may be required is a curetting of a carious patch, in another, perhaps the removal of the outer attic wall.

Mr. Heath appears to think that the hearing cannot be good after the removal of the membrane. I do not care to use the word "perfect," as Mr. Heath does, in connexion with the hearing; but I have several cases, still under occasional observation, in which I have removed the remains of both membranes, and whose hearing is very satisfactory indeed.

I beg to lay stress on the fact that my arguments are founded upon positive evidence, which is worth a great deal of negative assumptions. The frequent loss of hearing after the radical operation, which is now at last admitted, is, I believe, due to an effect upon the auditory nervous apparatus from shock due to the violent interference of the operation. It should not be thought to be due to removal of the remains of the membrane. Improvement in hearing has occurred

after otectomy in some hundreds of cases. There is at the present moment a girl in the Coventry Hospital who has had both membranes completely removed. She has no difficulty in answering questions asked in a low voice by myself, standing some distance from the end of the bed. The same might be said of a boy, also under treatment. I have always been ready to admit that it may be legitimate to risk the loss of some hearing, if danger to life can be removed by a radical operation and by that alone, but to advocate an operation, the effect of which on the suppurative condition is admittedly uncertain, must be considered a somewhat retrograde proceeding.

I am, etc,

F. FAULDER WHITE.

Coventry, May 10th, 1907.